THE EVOLVING SCOPE AND IMPACT OF TOTAL QUALITY MANAGEMENT IN LEADING SOUTH AFRICAN COMPANIES

by

KEVIN WALTON WEITZ

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Supervisor: Mr. R. J. Steenkamp

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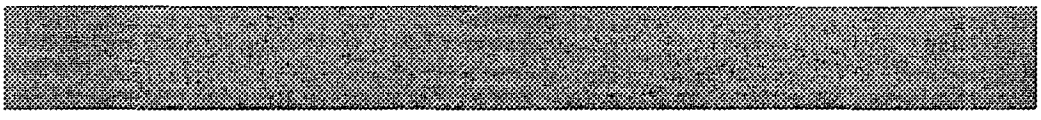

To my parents, who gave up so
much so we would not have to, and
provided us with all the
opportunities to be the
best we could be.

Albert Schweitzer said "example is leadership".
To William Hamlet Jones whose example
of discipline, honesty and friendship
has enriched my life.

To Jill and Matt for their patience
and support during the many nights,
weekends and holidays devoted to
this thesis instead of to them.

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SYNOPSIS

The objective of the study was to quantify the evolving scope of quality management as practiced in a sample of companies in South Africa, and to correlate this with corporate profitability.

The empirical data in this study suggests that a more extensive scope of application and practice of quality management and related management practices is related to better organisational profitability.

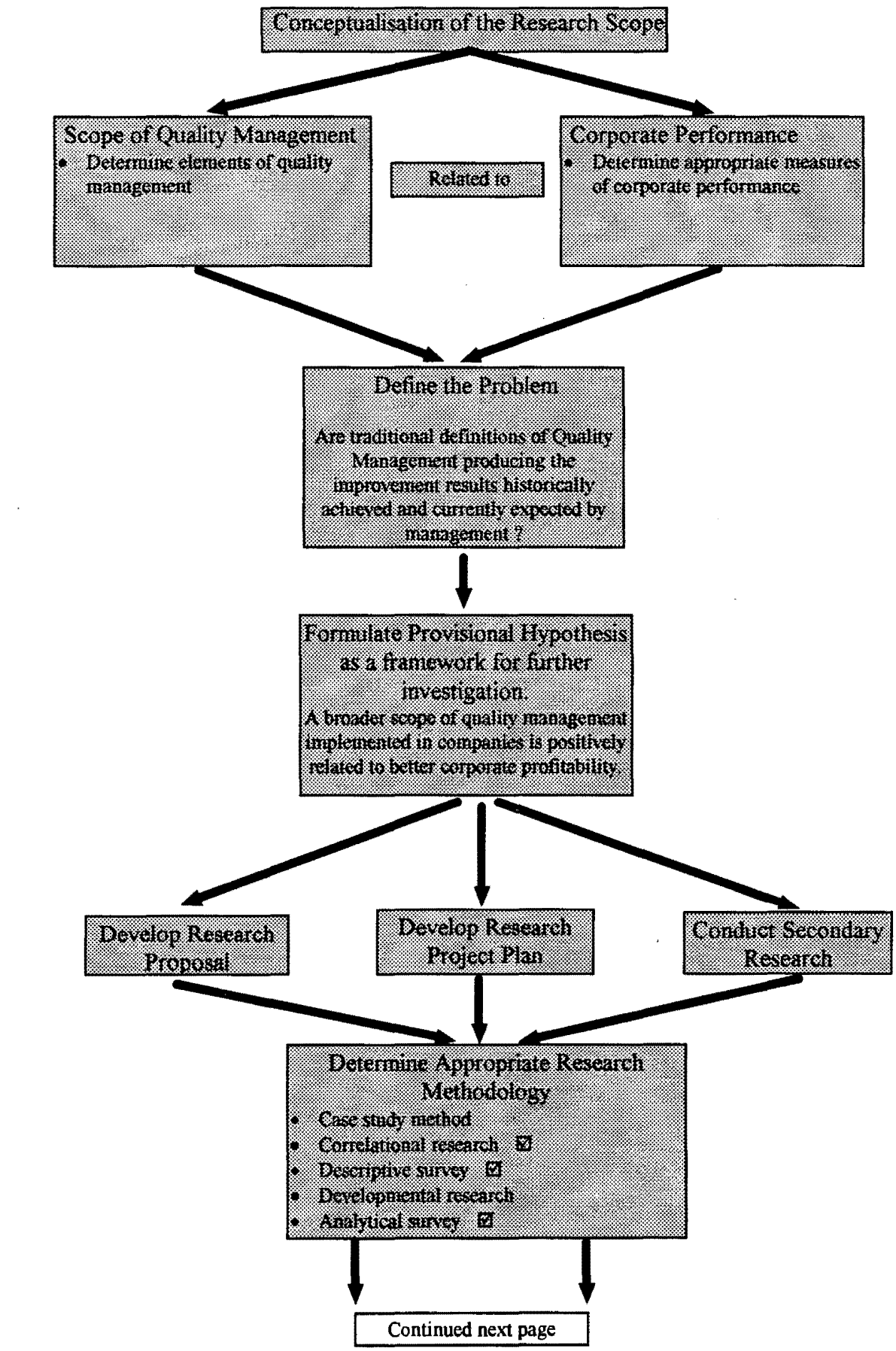
The significant correlations which were demonstrated are:

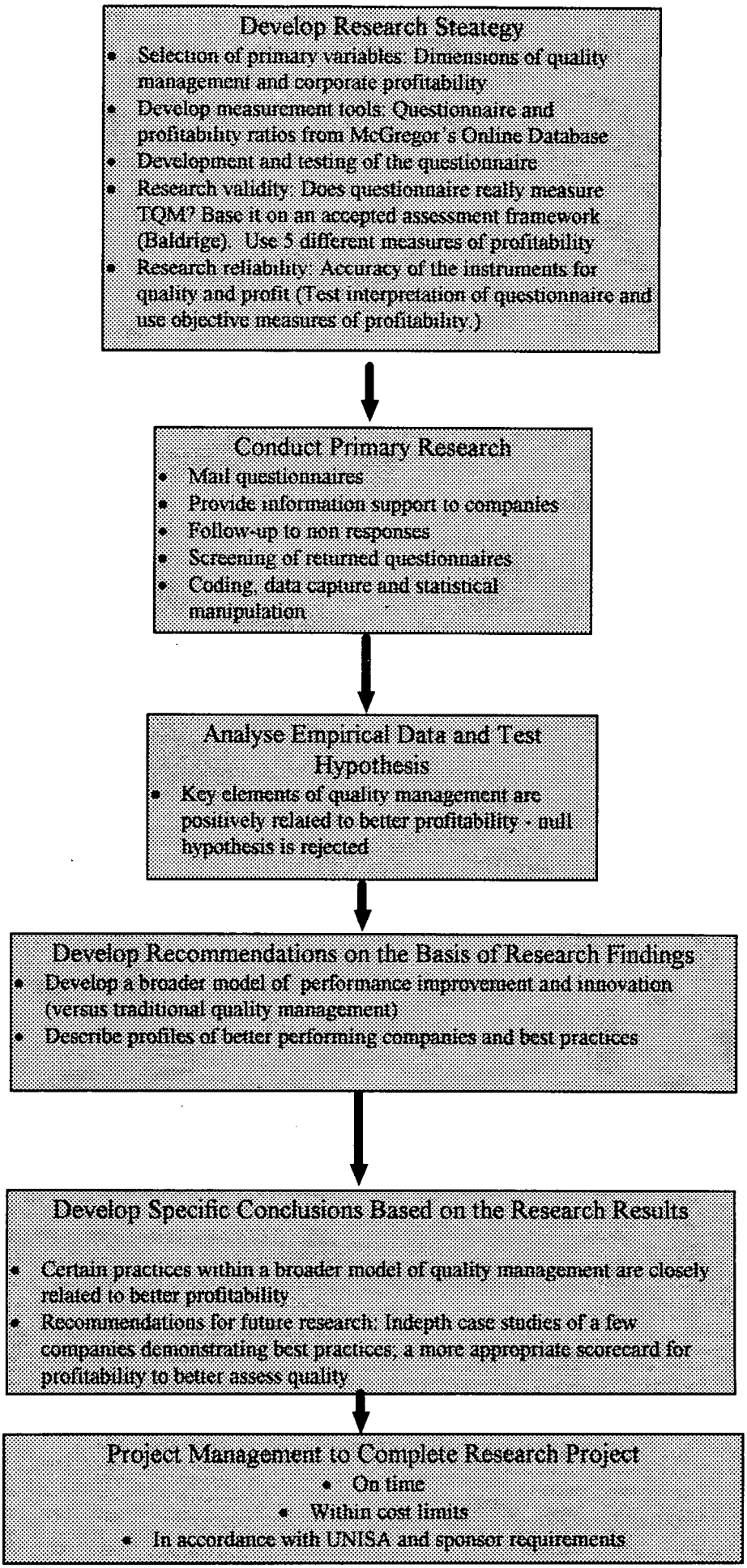
- A focus on results by companies is inversely correlated with Operating Profit Margin.
- Quality training, employee communications and internal coordination correlates positively with Net Profit Margin.
- The rigorous use of quality standards correlates positively with Net Profit Margin.
- Quality control and monitoring correlates positively with Return on Equity.

Recommendations flowing from this study include that a broader paradigm of quality management is required, expressed as an integrated model for innovation and change which is holistic rather than fragmented.

SUMMARY MODEL OF THE RESEARCH PROCESS

(See Chapter 5 for detail)




Develop Research Steategy
• Selection of primary variables: Dimensions of quality management and corporate profitability
• Develop measurement tools: Questionnaire and profitability ratios from McGregor's Online Database
• Development and testing of the questionnaire
• Research validity: Does questionnaire really measure TQM? Base it on an accepted assessment framework (Baldrige). Use 5 different measures of profitability
• Research reliability: Accuracy of the instruments for quality and profit (Test interpretation of questionnaire and use objective measures of profitability.)
Conduct Primary Research
• Mail questionnaires
• Provide information support to companies
• Follow-up to non responses
• Screening of returned questionnaires
• Coding, data capture and statistical manipulation
Analyse Empirical Data and Test Hypothesis
• Key elements of quality management are positively related to better profitability - null hypothesis is rejected
Develop Recommendations on the Basis of Research Findings
• Develop a broader model of performance improvement and innovation (versus traditional quality management)
• Describe profiles of better performing companies and best practices
Develop Specific Conclusions Based on the Research Results
• Certain practices within a broader model of quality management are closely related to better profitability
• Recommendations for future research: Indepth case studies of a few companies demonstrating best practices, a more appropriate scorecard for profitability to better assess quality
Project Management to Complete Research Project
• On time
• Within cost limits
• In accordance with UNISA and sponsor requirements

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to my supervisor, Mr.. Rigard J. Steenkamp, for his guidance and encouragement throughout the course of this research. To Mr.. Cas Coetzee who provided advice and guidance on the statistical analysis, thank you for your patience and expertise.

The Standard Bank of South Africa provided the funding for this research. I extend my deepest appreciation for their confidence in me and that this research would be a valuable investment.

I would like to thank Dr. J. P. du Plessis, President of the South African Bureau of Standards for his confidence and trust that this study would be of value, and for allowing the name of the Bureau to be used as sponsor of this study. Without doubt the study would not have succeeded without this assistance.

To Mr. Arthur Hodgkiss of I-Net for his assistance. So much in life is achieved through the goodwill of people like Mr. Hodgkiss who, for no other reason, simply appear to enjoy assisting their fellow men. I will endeavour to pass it on.

To Mrs Cooper, of UNISA's Editing Department, who with great patience, kindness and attention to detail provided me with a humbling lesson in English grammar.

Finally, I would like to thank the companies who responded. This study demanded a substantial effort in the completion of the extensive questionnaire and this effort is greatly appreciated.

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KEY TERMS

Total Quality Management, TQM, Reengineering, Process innovation, Business process improvement, Malcolm Baldrige Quality Award, ISO 9000, Profitability, Change management, Core processes, Flexibility, Customer focus, Empowerment.

CHAPTER 1

INTRODUCTION TO THE EVOLUTION OF QUALITY MANAGEMENT AND ITS IMPACT ON BUSINESS PERFORMANCE

CONTENTS

1.1 Introduction

Total Quality Management (TQM) has been, on the one hand, hailed by business leaders and theoreticians alike as a panacea to many business ills. The PIMS (Profit Impact of Market Strategies) research demonstrates that *"when superior quality and large market share are both present, profitability is virtually guaranteed"* (Gale & Buzzell 1989:6). On the other hand, more recently, TQM has been slated by the business literature as *"not delivering the goods"* (Economist 1992:69).

Some evidence suggests that in certain cases in which companies have performed poorly in the management of quality it is not that the *"intentions, efforts and resource commitments being directed towards TQM initiatives have been flawed, in fact research indicates quite the contrary ... Instead, the flaw may be in the design of the overall approach and specific implementation efforts"* (Chang 1993:23).

Based on the literature, it appears that where TQM is not performing well, it is in many cases, a result of implementing a traditional TQM strategy in a business environment which is very different from what it was just a decade ago - *"TQM didn't come with a plan for the situation we are facing now"* (Niven 1993:20). Where the nature and environment of business is changing at an ever increasing rate, TQM as a business strategy has, in many cases, not kept pace.

1.1.1 A brief historical background

A brief historical background of TQM, presented by Feigenbaum (1986:15) and summarised below, provides an important backdrop to how the practice of quality has developed over the decades, and indicates the positioning of the next phase of TQM.

From its infancy in the latter 1800's, "*operator quality control*" became entrenched in the manufacturing environment. In this system each operator was responsible for the manufacture of an entire product and had almost entire control over the quality of his personal work. In the early 1900's this progressed to "*foreman quality control*" in which the introduction of the modern factory took place. Individuals performing similar tasks were grouped together so that they could be supervised by a foreman who took responsibility for the quality of the group's work. This manufacturing system became more complex during World War I and resulted in the introduction of specialised inspectors, which has been labelled "*inspection quality control*". This phase peaked in the 1930's as a separate and independent function from production

which was large enough to justify its own management. This phase remained in operation until the true mass production era of World War II. This has been labelled the fourth phase of quality management and is called "*statistical quality control*". In this phase more sophisticated inspection techniques were developed that allowed large organisations to be more efficient.

Up to the fourth phase described above, major organisation-wide quality problems could not be challenged effectively, since the scope of statistical quality control was limited. This need brought in the fifth phase of quality management, known as "*total quality control*". Only once a total organisation approach to quality management was adopted could organisation-wide quality problems be challenged. This phase has extended from the 1950's to the late 1970's.

The sixth phase has been labelled "*total quality management*". This 1980's phase is most characterised by a business strategic planning component. The emphasis here is that quality leadership has become a primary component of competitive advantage and has a direct and measurable contribution to business profitability.

There are now indications that a seventh phase may be emerging in the decade of the 1990's. The following extract captures this evolutionary step:

> *In short, the implications emerging from the total quality movement go way beyond better products. They strike at the heart of management and organisational theory. Quality is too narrow a name for what we are talking about now ... Brian L. Joiner terms it "fourth generation management" (Business Week 1991:23).*

1.1.2 Dimensions of the "seventh" phase of quality

The above quote implies an expansion of the quality management paradigm that integrates quality principles into management and organisations to the point that a separate discipline of quality management may, in the near future, no longer exist in its traditional form. In its place will emerge an organisation operating on business principles in which quality concepts and practices will be fully integrated and simply assumed as the status quo. Quality will no longer be pursued as a key area of competitive advantage - it will be a basic necessity for competing in the industry. TQM, as it has been defined historically, will evolve into a much broader strategy. This far broader strategy will encompass a change in the methods, techniques, technologies and mindsets of how quality and business improvements are achieved, and the business functions which will be affected by quality improvement. Quality management will move beyond a relatively narrow focus on products and service to a mechanism for organisational change in a broad sense. Garvin (1991:80) captures this by describing the role of the Malcolm Baldrige Award in America: *"despite criticism from all sides, the Malcolm Baldrige Award is positioned ... as an agent for transforming U.S. business"*.

A few examples of further evolution in the scope and impact of quality management are further summarised below:

Management theory: It is suggested that further areas of evolution will be in management theory itself. For example, *Business Week* (1991:18) suggests that the traditional American bureaucratic command and control style of management is not conducive for improving quality and innovation, and is a key area of business which must change in the future if a company is to remain competitive.

The magnitude of improvement required: Another area of impact in the future may be the setting of organisation-wide goals that transcend the 10% to 15% improvement, quite typical of traditional TQM and described in the United States General Accounting Office study into Malcolm Baldrige Quality Award winners (May 1991). *"Motorola Inc., for example, may soon adopt an unheard of goal - 60 defects or less for every billion components it makes"* (*Business Week* 1991:18).

Quality included in diverse business functions: Diverse business functions, traditionally not affected by TQM, will soon be impacted by business improvement efforts. Research and development is a business function not normally defined within the scope of quality management. Feigenbaum (1986:800) deals with R&D only in terms of an audit being done on the R&D operation, but not as an integral part of the quality system. *Business Week* (1991:21) comments that scientists tend to ignore any suggestion that quality techniques could apply to their creative work. *Business Week* (1991:22) continues to allude to an impact on the legal functions of a business, an area typically outside of the quality management process: *"Eastman Kodak Co. has found by getting its patent lawyers to co-operate with its scientists instead of serving as patent gatekeepers"* that many impediments to success can be removed. Patent process improvement teams were established combining scientists and attorneys to increase the chance of yielding patentable products or processes. This also implies a significant possible impact on organisational synergy, particularly in large, diversified organisations. Feigenbaum (1986:11) comments that total quality control guides the co-ordinated actions of people, machines and information to achieve *"the placement of a product in the hands of a customer who remains satisfied"*. But in this broad definition of the scope of quality management, many business functions, for example accounting, can exclude themselves from this goal.

Business Week (1991:38) notes however that even accounting techniques are beginning to be impacted through quality management. An example given is that of

Tektronix Inc. who, as a last resort due to declining profitability, adopted a new and, at that time, unorthodox accounting system called activity based cost (ABC) accounting with "*astounding*" results.

The Malcolm Baldrige National Quality Award instituted by the United States government in 1987 has also initiated a new look at the scope of quality management, one dimension of which is the relationship between planning for quality and strategic planning. This is a dimension of quality management previously not often discussed in the literature. One of the components of the Malcolm Baldrige Award criteria (Malcolm Baldrige National Quality Award, 1992 Award Criteria 1992:12) is a strategic planning framework. Feigenbaum (1988:17) also notes that quality has become a *"significant factor ... in business strategic planning"*. However he does not discuss any possible impact that quality management may have on the process of business strategic planning. Garvin (1991:91) notes that *"at the best companies quality planning is indistinguishable from business planning"*. Again, this demonstrates a significant shift in the definition and scope of TQM.

Organisational structure: One of the critics of the Baldrige Quality Award is Tom Peters. Peters (Zemke 1991:30) notes that the quality criteria in the Baldrige do not include "*bureaucracy*"; the implication being that the scope of quality management should expand to impact business functions and factors such as organisational structures, internal communications and culture.

Quality as a mechanism for organisational change: Kanter (1983:241) notes that a key ingredient for successful organisational change is employee participation, and that a potentially effective participative technique is that of "*quality teams*". This reference further suggests that the expanding role that quality management may be a powerful process for organisational change and innovation in general, as opposed to simply continuous improvement.

1.1.3 Quality management will evolve as business itself evolves

The foregoing review of the literature suggests that the scope of traditional quality management may be expanding into a new evolutionary phase and that its impact on business functions may be increasing in importance. Indeed it appears that rather than simply an evolution in total quality management, a significant shift in business practice is being experienced.

Drucker (1988:45) holds that as business enters the last decade of the twentieth century, it is still based largely on the "*command and control*" model that business adopted from the military over 100 years ago. He continues to claim that a typical large business in the next decade will bear little resemblance to the company profile within the current paradigm accepted by most business practitioners and theorists.

Crozier (1991:138) notes that the standards and practices of modern business arose to meet the problems and challenges of the industrial and commercial organisations of the late 1800's. He maintains that organisational life is now a "*different game and a different game requires new rules*". Crozier claims that managers must reinvent their managerial systems and rethink the ethics that govern them.

The following extract from Human Resources Management Yearbook by Vermaak (1992:18) describes the South African position:

> *Business organisations in South Africa are in many instances today finding themselves in uncharted waters. They are positioned in an environment that is characterised by fast politics, slow economics and great social expectations ... However, when it comes to introducing and managing change in our organisations a large percentage of management is apparently still acting with*

yesterday's logic. Organisations will have to think across their traditional boundaries and define new concepts of business if they want to survive. Leading edge companies abroad have, in an attempt to bring their organisations in line with human nature, adopted new, innovative and non traditional models of organisations. These transformed organisations now seem to compete more effectively in a fast paced global economy ... .. It becomes apparent that leading organisations are governed by a completely new mindset.

1.1.4 A new economic order

The demands on organisations from the intensified competition of the so-called *"new world (economic) order"* are commented on in the opening paragraph of a major study jointly conducted by international consultants Ernst & Young and the American Quality Foundation (Ernst & Young, 1991:3).

The study appears to be relating the term coined by United States President George Bush when he coined the phrase *"new world order"*, referring to a the emerging political structure and attitudes across the world. Except in this case the new world order referred to by Ernst & Young is economic, in which companies are no longer restricted by national boundaries, but are all able to compete in a global village. To survive in this greatly intensified competitive environment, businesses must meet the needs of their customers by offering quality products and services which outperform international competitors rather than simply domestic players. Clearly this internal focus has historically been a significant limitation to South African businesses. The Ernst & Young report goes on to say that this increasing international focus has created a greater focus on *"value through quality"*, from which has emerged a new paradigm of management in which the primary objective of business is to create value for the customer, which in term results from a continual focus on quality management.

From the historical account of quality management given previously one may deduce that a new evolutionary step is beginning to take place. Based on certain of the previous quotes from various writers, it could also be deduced that business in its broadest functional definition, may also be at an historical juncture Essentially, business is becoming a different game requiring new rules.

1.2 Research objectives and goals

1.2.1 Objective of the study

The objective of the study is to assess and quantify how South African companies manage quality in their organisations currently, and how this may change in the future, and then to compare this with an objective measure of company performance, in this case corporate profitability, to determine a possible relationship. The research will make it possible to quantify the scope of quality management in companies and to assess the impact this scope has on company profitability.

1.2.2 Statement of the problem

The specific statement of the primary problem question is as follows:

To what degree are leading South African companies expanding their definition of quality management practice, comprehensively integrating the full spectrum of business functions within a quality management system and aligning their entire business with quality principles and performance improvement practices, thus enhancing their competitive position and business performance?

1.2.3 Research hypothesis

The primary research hypothesis is:

The financial performance of South African companies is positively correlated with the evolving scope of quality management practiced in these organisations

1.2.4 Goals of the study

The following goals have been derived from the objective and the research hypothesis:

- Study the research literature on quality management practices both internationally and in South Africa to determine the dimensions of quality management as it is practiced and proposed by leading companies and quality management theoreticians.

- Define an appropriate framework for assessing and measuring quality management programmes in an organisation, which allows for the assessment of traditional and non-traditional quality management practices.

- Assess the relationship between this framework for quality management and company performance utilising accepted measurements of company performance.

- Describe the results and findings of the analysis which have been performed.

- Make recommendations and conclusions which may be useful for South African companies in the management of quality in their organisations.

1.2.5 The importance of this research subject

Porter (1990:6) claims that the only meaningful concept of competitiveness at the national level is national productivity. He claims that a nation's firms must relentlessly improve productivity in its existing industries by raising product quality. Unfortunately The Republic of South Africa (RSA) has been in a recession for over two years (de Waal 1992:14). De Waal claims that real gross national product per capita in RSA has declined - the country's formal sector normally employs 12 million people while at the moment some 4 million are unemployed. De Waal continues to claim that it is essential for South Africa to achieve accelerated economic growth if this country is to thrive in the future. He makes comparisons to Taiwan and Korea with some of the higher population densities in the world which have been able to achieve remarkable economic growth by pursuing growth policies based on total quality management.

The title of de Waal's paper "*Total Quality Management to meet the challenges of change*", implies that total quality management is a process for company, industry and national renewal and change - but it must be applied as a comprehensive work process. De Waal continues that it is only through an approach aimed at total quality that this country will meet the challenges of a changing environment. By applying the principles of quality management, says de Waal, South Africa will be better able to become an economic and industrial First World success story in which the living standard of the total population can be dramatically improved. This strong viewpoint by de Waal is motivation for South African firms and managers to become more aware of the concept of total quality management as a management tool for change and economic renewal.

The trends demonstrated by the literature research suggest that the scope and impact of the total quality management process is expanding. It is proposed that a better understanding of the expanding scope and impact of total quality management will assist managers of South African business to meet the challenges of a changing future now that sanctions are falling away (de Waal 1992:17) and South Africa re-enters the global market place. It is proposed that a broader perspective and application of total quality management are essential.

1.3 Limitations of the research

1.3.1 Secondary data

The majority of secondary information identified is of American origin and thus direct correlations must be made with circumspection. Although research does exist on quality management in South Africa, it tends to focus on specific industries rather than the focus of this study of broad quality management practices.

1.3.2 Primary data

Interpretations of primary data are based on a sample of South African companies (the Business Times 100 database as provided by I-Net) who responded to the research questionnaire mailed to them. An assumption made is that adequate time and care were given by the respondents to the completion of the questionnaire to ensure accurate and comprehensive results. Further details concerning the sampling methodology, the questionnaire design and the targeting strategy are included in Chapter 5.

1.4 Description of the study

The overview description of the study is presented in Figure 1. **Chapter 1** describes the background and origin of the study and sketches a scenario of concern identified in the literature about the management of quality and company performance. This chapter postulates that quality management is evolving into a new paradigm.

This chapter includes an introduction of the research objectives, hypotheses, goals, importance and limitations of the research.

The purpose of **Chapter 2** is to provide an overview of what quality management as a discipline is, as described by so-called gurus, as well as internationally accepted models and standards for quality management.

Chapter 3 reviews the literature to expand on the definitions of quality management outlined in Chapter 2 and describes the problems with and failures of the current practice of quality management as identified in the literature. **Chapter 4** continues this review of the literature by describing the evolving dimensions of quality management. The purpose of this chapter is to create a framework against which to test evolutionary changes in the management of quality.

Chapter 5 describes the research methodology, including statistical techniques, sampling approach and the scope of the research. The statement of the primary and secondary research problems is included. Chapter 5 concludes with a description of mechanisms applied to ensure research validity and reliability.

The purpose of **Chapter 6** is to explore data obtained from the questionnaire and the results of the statistical analysis. Explanations of the relationships between the primary and secondary variables are provided.

Chapter 7 analyses the findings and tests the hypotheses, while **Chapter 8** puts forward a new model for corporate performance improvement and innovation and makes recommendations for the successful management of quality for South African companies. **Chapter 9** provides an overall summary and, since the research is an initial exploration beyond the traditional scope of quality management, recommendations are made for further research.

1.5 The research process and project framework

1.5.1 Introduction

The research process was initiated informally in the workplace of one of South Africa's leading financial institutions when faced with the challenges of designing a system for managing quality, innovation and change in a more effective and permanent fashion. This led to the completion of an introductory study in 1990.

Rather than providing answers, this raised further questions and a cyclical research process was initiated. Leedy (1989:9) comments on the dynamic quality of research in that it creates more problems than it resolves, and this is certainly the case in this research process.

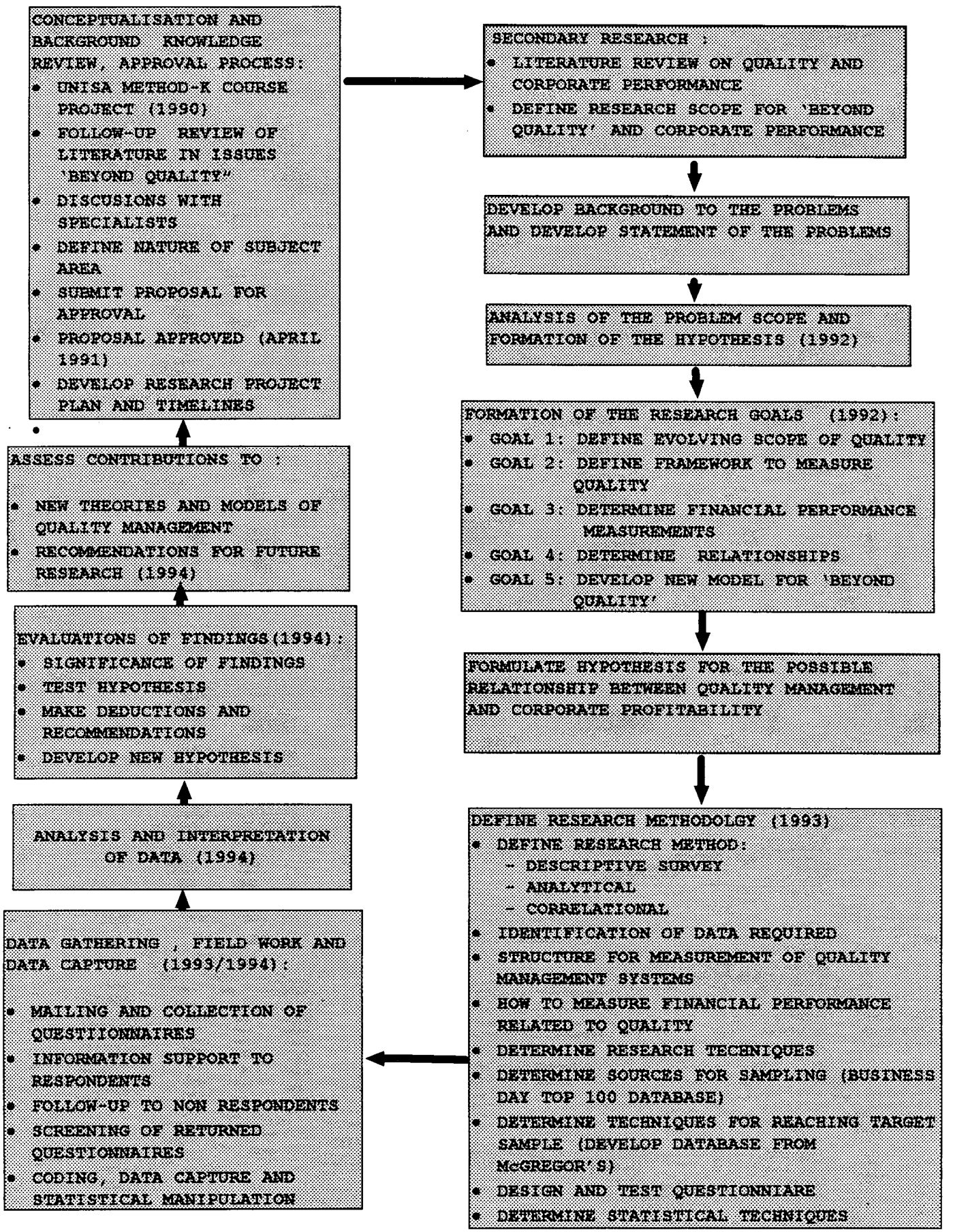
1.5.2 The transitional nature of research and the need for pragmatism

What is immediately evident in this cyclical process is the transitional nature of research information - what appears reasonable now may be viewed as trivial in a few years time. As Hughes notes (1980:6), certain research deals with "*what exists*" (i.e. ontological research). Hughes makes a distinction beween "*what exists*" and the

research into questions which produces answers which can count as enduring "*fact*", or epistemological research. This "*knowledge*", on which society may base their behaviour and actions, must be justified by the rigorous manner it is acquired - including experimental methods, correct procedures, authoritative sources and experience (Hughes 1980:7). Indeed, as Hughes claims, the authority of our knowledge is derived from the "*collective public license*" bestowed on it through the adherence to disciplined and correct research method. The business community in particular is averse to decision making on the basis of "*unlicensed*" knowledge and certainly "*flavour of the month*"-type ideas of business practice. The risks are too great in many cases. There is a bias towards pragmatism in business research problem-solving despite its weakness of complexity (Johnson 1986:73). It was felt important indeed for this research to deal with issues and ideas which would be considered useful and practical by people involved in business. To this end, the study has been designed to have a quantitative bias using the definition of Ghiselli, Campbell and Zedec (1981:11), who note that quantitative variables deal with data of frequency, degree or amount, while qualitative data have no intrinsic ordering other than that arbitrarily assigned by people in society. Given the bias of people in business to issues of a quantitative nature, this research has been designed to correlate what can be considered a "*softer*" discipline of quality management to quantitative data of financial performance. In this way it is hoped that the findings of this research study will be of practical use to people in business and will be given "*license*" by the business community as being worthy of the label "*knowledge*".

Figure 1.1 below provides a cyclical research process view of this study over a three year period and is based partially on the model of cyclical research by Leedy (1989:9) as well as the study Guide for Master's and Doctor's Students in the Management Sciences, UNISA Department of Business Economics (Figure 1:6). Details of the management of this research project are provided in section 5.10.

FIGURE 1.1: MODEL OF RESEARCH PROCESS



CHAPTER 2

MODELS OF QUALITY MANAGEMENT

CONTENTS

2.1 Introduction

In order to determine possible further evolutionary phases for quality management, it is necessary to provide a framework against which to compare this possible advance. This chapter provides a brief summary of a number of quality-related approaches, in most cases identified under the quality management authority associated with it. It should be noted that this is not an exhaustive survey of quality systems and therefore only includes a compendium of some of the better known systems and specialists. In addition, each system summarised below is complex in its own right and this study cannot justify a full and detailed description of each.

A major research study conducted jointly by management consultants, Ernst & Young and The American Quality Foundation (AQF) identified that there are significant differences in quality management practices amongst the different countries and industries in which the study was conducted (Ernst & Young and AQF, Top Line Findings 1992:4). Clearly, these differences are important to understand if companies are to define or adapt quality initiatives which are considered, by the sample investigated in the Ernst & Young study, to be "*a critical factor in strategic performance*".

Since, as the researchers claim, the Ernst & Young Study is possibly the most extensive study into quality management world-wide, it has been used in this study as a benchmark in the structuring of the questionnaire and the analysis and interpretation of the data. Another source used fairly extensively in this study, particularly the literature review, is Bowles and Hammond (1991). This text, entitled "*Beyond quality*", intimately explores the evolution beyond the traditional scope of quality management by various companies, and is therefore used as a primary benchmark source in this review of the literature .

What must surprise many newcomers to the processes of quality management is, while the literature is replete with information on quality (as if it were a fairly new business science which businesses are only recently coming to grips with - and clearly many are not) the concepts have been formulated and practiced in many Japanese companies for over forty years (Bowles & Hammond 1991:28). So-called "*gurus*", such as W. Edward Deming, along with Joseph M. Juran and A.V. Feigenbaum have been propounding quality management principles for half a century. Deming and Juran in particular have been accredited with introducing quality to the Japanese. Certain writers understate the roles played by these "*gurus*" of quality. Bowles and Hammond (1991:28), for example, have labelled their roles as *"modern versions of Tom Sawyer whitewashing the fence"*. These authors claim that virtually all of the most important innovations in continuous improvement - *kaizen* - were made in Japan - "*They were developed out of that great mother called necessity"* to become competitive on an international level after the destruction of the second World War (Bowles & Hammond 1991:28).

Bowles and Hammond (1991:29) contradict the often held assertion that it was Deming and Juran who introduced quality management to the Japanese. Indeed, they assert the opposite was partially true. The teachings of Taiichi Ohno and Kaoru

Ishikawa were one of the most significant contributions to Japan's ability to dominate many world-wide industries through an intensive quality drive. Their ideas essentially shaped the quality movement not only in Japan but also in America in the 1980's.

2.2 The Malcolm Baldrige National Quality Award

In 1987 the United States Congress and then President Ronald Reagan, created the Malcolm Baldrige National Quality Award, annual citations to companies who have made the most significant progress in improving quality and customer satisfaction. The Award is administered by the American Society for Quality Control and it has become a highly visible beacon for the improvement of quality in America. Bowles and Hammond (1991:142) claim that the Baldrige Award has been remarkably successful in raising the awareness of the benefits of continuous quality improvement in American industry.

But the Baldrige is not without its critics however. As the Baldrige moves towards its fifth year, questions are being asked about its validity - although not in principle, but in application. Ron Zemke (1991:29) quotes William Bleuel, Associate Professor of Quantitative Measures at Pepperdine University in Los Angeles, who challenges the Baldrige criteria by highlighting the weighting given to participative management processes. Bleuel challenges the fact that the criteria have a tendency to be one-tracked and inflexible - a *"you've got to do it our way"* approach, claims Bleuel. There are a lot of ways to manage a company, claims Bleuel, and participation is only one. The Baldrige criteria do appear to favour, if not insist on, a participative management style. Bleuel's argument could be contested on the basis that increasingly the need for a participative management style in organisations is becoming necessary across industries.

Tom Peters is another visible critic (Zemke 1991:30):

> *I got ansy when Motorola, Xerox, IBM, and GM copped the lion's share of the manufacturing awards, so I reread the application. It's eerily silent about the need to get rid of bureaucracy in organisations. And despite remarkable gains, the four honoured giants remain bureaucratic quagmires.*

Peters is not entirely negative, however. He believes that the Baldrige is the most important development in the quality movement over the past ten years.

Other concerns deal with perceived biases in judging and alleged bias between manufacturing firms and service organisations as well as small businesses. Peters continues to criticise:

> *The examiners have had the devil's own time finding any small company winners, and they've had a harder time finding a service company winner. My comment to them is that the top manufacturing companies in the United States can't hold a candle to the top service companies when it comes to understanding this (quality) stuff. What's the problem?*

Even one of the Baldrige examiners has expressed concern. Patrick Townsend (Zemke 1991:30) feels that the nomination of Cadillac as a Baldrige winner to be a potential "*time bomb ... All we'd need would be a recall of 3 000 Caddies, and that would be it for (the Baldrige's) credibility.*"

The Baldrige Award critics demonstrate a central issue of this research, that quality systems have evolved beyond the single focus on the quality of product or service. Quality management appears to be integrating itself all aspects of business - indeed, the strategic management system of the organisation.

But the Baldrige was not intended to be an assessment of the full competitive health of an organisation (Bowles & Hammond 1991:144). Ironically however under the present criteria it is possible for a company performing poorly in financial terms to win the Award. Bowles and Hammond further contend that financial performance, innovation, environment, waste management, policy deployment and planning are areas in which the Baldrige should be strengthened in.

Clearly the Baldrige system is being upgraded each year. Being a programme only five years old, early mistakes should not be surprising, and ongoing progress can be expected. Early criticisms of Baldrige winners as having the most control charts have to some degree been answered. Upgraded criteria now emphasise the definition of quality being more focused on customer satisfaction. The technical adherence to specifications has been de-emphasised.

The Baldrige criteria are directed towards producing results, says the 1992 Malcolm Baldrige Award Criteria booklet (1992:2). Results, as used in the criteria, are a composite of the following key performance areas:

- Customer satisfaction
- Customer satisfaction relative to competitors
- Market share
- Customer indicators such as complaints and customer retention.
- Market responsiveness and cycle time
- Internal quality, productivity, waste reduction, and asset utilisation
- Company specific effectiveness indicators such as new markets, new technologies, and new products
- Supplier quality and supplier development
- Environmental quality, occupational safety and health, and regulatory compliance

- Employee development, well-being and satisfaction
- Contributions to national and community well-being

There are seven categories or items in the criteria and these are allocated points based on their relative importance as follows:

TABLE 2.1 MALCOLM BALDRIGE QUALITY AWARD POINTS ALLOCATION, 1992

CATEGORY	POINTS
Leadership	90
Information and Analysis	80
Strategic Quality Planning	60
Human Resources Development and Management	150
Management of the Quality Process	140
Quality and Operational Results	180
Customer Focus and Satisfaction	300

The Baldrige was never intended to be a comprehensive business award assessing all key aspects of business (Bowles & Hammond 1991:147). This limitation demonstrates the pressure behind an evolution in the concept of total quality management to a system that goes "*beyond quality*" to become a system of strategic management in which quality is fundamental and which is the mechanism for creating innovation and change.

2.3 Philip B. Crosby

Philip B Crosby started his career in quality management with the Pershing missile project at the American corporation, Martin Marietta (Tenner & DeToro 1992:21). After significant successes in his "*zero defects*" programme, he was appointed vice president of International Telephone & Telegraph (IT&T) with responsibility for worldwide quality operations. He is the author of a number of books on the subject, including "*Quality is Free*" and "*Quality Without Tears*". He is now chairman of Philip Crosby Associates.

Crosby defines quality simply as "*conformance to requirements*" (Crosby 1984:58-60) which is one of his four so-called "*absolutes of quality*". The remaining three are:

- The system of quality is prevention.
- The performance standard is zero defect.
- The measurement of quality is the price of non-conformance.

Crosby's approach to quality is also summarised in fourteen steps built around these absolutes of quality (Crosby 1984:101-119):

- Management commitment
- Quality improvement teams
- Measurement
- Cost of quality
- Quality awareness
- Corrective action
- Zero defects planning
- Employee education
- Zero defects days
- Goal setting

- Error cause removal
- Recognition
- Quality councils
- Do it all over again

2.4 The contributions of Taiichi Ohno

Taiichi Ohno is given credit for transforming production processes throughout the world more than any single individual since Henry Ford (Bowles & Hammond 1991:29). His contributions include pioneering the concepts of Just-in-Time production *"the most important single innovation in manufacturing (and quality improvement) since mass production"*. His production techniques are the basis of what is today called "*flexible manufacturing*" or "*lean production*". He is given credit for his role in transforming Toyota from a small-car manufacturer in the 1940's into the worlds third-biggest automaker today after General Motors and Ford.

Ohno also pioneered the concept of teamwork on the factory floor of Toyota. Instead of the Ford Motor Company approach in those days of workers being isolated to a few simple tasks, Ohno had work groups led by team leaders instead of foremen. These teams had substantial responsibility to best accomplish work tasks. This was the start of the quality circle concept as it became known (Bowles & Hammond 1991:30). One of Ohno's most significant contributions to the practice of quality management was the view that the traditional practice of passing errors down the line to be fixed later in the production process actually multiplied errors and increased the cost of repair. He implemented the system whereby any worker was instructed to stop the assembly line when a problem was detected. A process of error detection (*"The Five Why's"*) was then used by employees to identify the root cause of the problem. This system in its evolved state today yields Toyota a close to perfect production record - the line is almost never stopped (Bowles & Hammond 1991:32).

2.5 The W. Edward Deming principles

Deming earned a Ph.D. in Physics from Yale in 1924 and became a colleague of Dr. Walter Shewhart, one the pioneers of statistical manufacturing control at the United States Department of Agriculture in the 1930's. In 1950 Deming as a then "*obscure Census Bureau statistician*" (Bowles & Hammond 1991:39) was invited by Ichiro Ishikawa, the then President of the Union of Japanese Scientists and Engineers, to deliver a speech on statistical analysis. Bowles and Hammond (1991:39) claim that the probable purpose of the invitation was not for the audience (a group of Japanese industrialists) to hear about statistical analysis, which had been in place in Japan for some years, but for the message that they - management - were the problem in poor quality, and that nothing would change unless they took personal responsibility to change.

Bowles and Hammond (1991:39) suggest that Deming's Famous Fourteen Points were in fact borrowed from Japanese Total Quality Control techniques and from J.M. Juran. His lectures in Japan eventually led to the establishment of the now famous Deming Prize for quality excellence in Japan. Deming was virtually ignored in his own country until he was discovered by a now famous television documentary on America's quality dilemma called "*If Japan Can - Why Can't We*".

Deming's fouteen points for quality management are:

- Create constancy of purpose for improvement of product and service.
- Adopt the new philosophy.
- Cease dependence on inspection to achieve quality.
- End the practice of awarding business on the basis of price tag alone. Instead minimise total cost by working with a single supplier.

- Improve constantly and forever every process for planning, production and service.
- Institute training on the job.
- Adopt and institute leadership
- Drive out fear.
- Break down barriers between staff areas.
- Eliminate slogans, exhortations, and targets for the work force.
- Eliminate numerical quotas for the work force and numerical goals for management.
- Remove barriers that rob people of pride of workmanship. Eliminate the annual rating or merit system.
- Institute a vigorous programme of education and self-improvement of everybody.
- Put everybody in the company to work to accomplish the transformation.

2.6 Armand V. Feigenbaum

In 1951 Feigenbaum earned a Ph.D. from the Massachusetts Institute of Technology and held the position of manager for manufacturing for General Electric worldwide for ten years. Feigenbaum coined the now well-known term of "*total quality control*" in an article in the *Harvard Business Review* in 1956 and published the first edition of the seminal text in the subject first in 1961. Feigenbaum is also credited with the development of the concept of the "*cost of quality*".

Feigenbaum's basic elements of quality control are:

- Quality assessment at pre-production stage
- Product and process quality planning
- Purchased material quality evaluation and control
- Product and process quality evaluation and control
- Quality information feedback
- Quality information equipment

- Quality training, orientation and manpower development
- Post-production quality service
- Management of the quality control function
- Special quality studies

The basic principles of Total Quality Control according to Feigenbaum are as follows:

- Quality must be structured to support both the quality work of individuals and quality teamwork among departments.
- Quality must be perceived to be what the buyer says it is and not what the engineer, marketer or manager says it is.
- Quality improvement requires the application of new technology; it is not simply a matter of using a few traditional quality control techniques.
- Make quality improvement a full equal partner with innovation from the onset of quality development.
- Emphasise getting high quality product design and process matches upstream before design limits the quality alternatives.
- Make the acceleration of new product introduction a primary measure of the effectiveness of a quality programme.

2.7 Kaoru Ishikawa

Ishikawa was at the forefront of quality management in Japan from its earliest stages in the 1940's. He was awarded the Deming Prize for his contributions to the field of quality management. Ishikawa's basic philosophies are:

- Total quality control opens up channels of communication within a company and breaks down the common parochial barriers between functional units.

- TQC requires that the design and manufacturing entities of the company assess the changing needs and attitudes of customers efficiently and accurately so that products can be manufactured to consistently meet the needs of customers.
- The importance of quality applied to social issues.
- The drive for short-term profit should not compromise quality.
- The concept of the next operation as customer (internal customers).
- The effective use of statistical measures.
- Respect for people as a management philosophy.
- A participative management approach.
- Cross-functional management.
- A problem-solving process for all employees.

2.8 Joseph M. Juran

Juran is best known for his seminal text, "*Quality Control Handbook*" published in 1951. At the Bell Laboratories he established the first statistical process control techniques for factory operations. Juran's basic philosophies are:

- Quality is defined as fitness for use.
- Quality planning and control is as pivotal as financial planning and control within an organisation.
- Quality improvement is analogous to cost reduction.
- The application of a project approach to quality improvement in which problems are identified and then scheduled to be solved.
- The use of the Pareto analysis system, which he pionered, to target the critical few issues which would realise greatest value.
- Corporate survival and growth depend on major breakthroughs to new levels of performance.
- Customer needs must be translated into product and process features.

- The cost of poor quality is the key attention getting tool of top management.
- Chronic waste must be identified and eliminated.
- The Quality Trilogy concept:
    - Quality planning.
    - Quality control.
    - Quality improvement.

2.9 ISO 9000

ISO 9000 is a set of quality system guidelines commonly used in Europe, but increasingly used worldwide. Hockman (1992:36) writes that 35 countries worldwide have adopted ISO 9000 and its third party audit system. As one example of its credibility, NATO and the United States Department of Defence have also embraced ISO 9000. In Europe ISO 9000 has become the de facto standard for quality performance. If two suppliers are vying for a contract and one has achieved ISO 9000 registration, the chances are this company will receive the contract - it is becoming a significant competitive advantage. In Europe more than 25 000 companies have been certified.

In the past, United States companies used European registrars such as the British Standards Institution, but this is changing. In 1990 the Registrar Accreditation Board - an affiliate of the American Society for Quality Control - was formed to license domestic registrars. The Board has formed a partnership with the American National Standards Institute (the United States representative to the ISO) to operate a registrar accreditation programme in the United States.

Hockman claims that ISO 9000 is not a substitute for the Malcolm Baldrige Quality Award criteria and, in fact, covers much of the same ground the as Baldrige.

As with the Baldrige, ISO 9000 is not without its critics. Crawford (1993:11) claims that the ISO method is not universally popular and that the reasons are quite obvious. In many cases companies adopt ISO 9000 because they are forced to by their major suppliers. At a national level companies wanting to export into Europe may are increasingly being required to have achieved ISO accreditation. This, says Crawford, is a concern in that they begrudgingly adopt a quality approach which may lead to certification, but little else. Crawford claims evidence that there are many cases in which companies who have achieved ISO 9000 are not better and in some cases worse, than non ISO listed companies. There are sound reasons for this given that ISO 9000 evaluates the systems of a company but does not, for example, assess that management involvement in the pursuit of quality takes place, that continuous improvement activities such as quality circles or project teams are actually taking place, that policy management actually takes place or that anything more than "*lip service*" is given to calibration and maintenance of measurement systems.

Crawford claims that there are many quality-related issues, such as the preceding, which are not included in the standards. According to him, another major flaw, he claims, is that ISO 9000 encourages third rather than first party (i.e. the receiving company itself) audits. Third party assessments he says are not common in the United States. Crawford (1993:13) contends that ISO standards have cost the United Kingdom ten years progress in quality management. Crawford uses as an example of ISO 9000 being out of step with leading quality practice that the Japanese do not use ISO standards. He believes that the gap between the Japanese and the rest of the world will continue to widen unless the process is stopped by Deming and Baldrige type strategies. He claims that the criteria of ISO 9000 would amount to about 300 points at best on the Baldrige 1000 point scale.

The ISO 9000 series includes the following standards (ISO 9000 International Standards for Quality Management 1992):

ISO 9000: Quality management and quality assurance standards - Guidelines for selection and use.

- ISO 9001: Quality systems - Model for quality assurance in design/development, production, installation and servicing.
- ISO 9002 Quality systems - Model for quality assurance in production and installation.
- ISO 9003: Quality systems - Model for quality assurance final inspection and testing.
- ISO 9004: Guidelines for quality management and quality system elements

The ISO 9000 series includes generic quality system requirements for the following basic elements that affect quality systems. The elements included within each series are identified:

- Management responsibility: 9001, 9002, 9003, 9004
- Quality system principles: 9001, 9002, 9003, 9004
- Auditing the quality system (internal): 9001, 9002, 9004
- Economics - Quality related cost consideration: 9004
- Quality in marketing (Contract review): 9001, 9002, 9004
- Quality in specification and design (design control): 9001, 9004
- Quality in procurement (purchasing): 9001, 9002, 9004
- Quality in production (process control): 9002, 9004
- Control of production: 9001, 9002, 9004
- Material control and traceability (product identification and traceability: 9002, 9003, 9004
- Control of verification status (inspection and test status): 9001, 9002, 9003, 9004
- Product verification (inspection and testing): 9001, 9002, 9003, 9004

- Control of measuring and test equipment (inspection, measuring and test equipment): 9001, 9002, 9003, 9004
- Nonconformity (Control of non-conforming product): 9001, 9002, 9003, 9004
- Corrective action: 9001, 9002, 9004
- Handling and post production functions (handling, storage, packaging and delivery): 9001, 9002, 9003, 9004
- After-sales servicing: 9001, 9004
- Quality documentation and records (document control): 9001, 9002, 9003, 9004
- Quality records: 9001, 9002, 9003, 9004
- Personnel (training): 9001, 9002, 9003, 9004
- Product safety and liability: 9004
- Use of statistical methods (techniques): 9001, 9002, 9003, 9004
- Purchaser supplied product: 9001, 9002

2.10 Conclusion

The review of the major quality systems indicates that while there are similarities amongst quality systems, there is significant disagreement amongst various experts concerning the best approach for any single company to adopt. It is clear that a company cannot simply implement any single system in a "*turn-key*" fashion - any approach must be designed and customised for the specific needs of the company.

CHAPTER 3

REVIEW OF THE LITERATURE
PART 1
THE TRADITIONAL DIMENSIONS OF TOTAL QUALITY MANAGEMENT

CONTENTS

3.1 Introduction

Given the broad scope of this research study, namely the expanding boundaries of quality management practices, the literature review was structured and then developed around an internationally accepted quality management framework, namely the Malcolm Baldrige National Quality Award in the United States of America. As the literature was studied so further dimensions associated with this basic structure were added as they were identified. The previous chapter provided a review of the Malcolm Baldrige Award as well as a number of other well known systems (such as the International Standards Organisation (ISO) 9000) as well as leading so-called "*gurus*" of quality management. This chapter focuses primarily on the traditional dimensions of quality management, while Chapter 4 focuses mainly on the evolving dimensions which go beyond traditional quality management and what is referred to in this study as "beyond quality".

It should be noted, before progressing with this review, that there are evidently a number of leading South African executives (and one could assume line managers below them) who do not agree with this evolving scope of quality management hypothesis. Three specific comments related to the very broad scope of the questionnaire from targeted companies in this research study were received. These comments related to why a quality management study was asking questions "unrelated to quality". In one case the executive chairman of a leading South African mining group requested a face-to-face discussion on this issue since he was not inclined to respond to a study on issues related to, for example, strategic management. During this discussion it became clear that this executive felt that quality management was essentially limited to SABS 0157 (ISO 9000) and was somewhat concerned, if not indignant, that questions outside of this definition were being asked. A description of international trends failed to convince him that his definition may be somewhat limiting. Unfortunately, he still refused to complete the questionnaire. Despite a failure to convince him, his opinions were valuable in terms of his rather narrow definition of the subject and his view that quality had no role in other business functions such as business strategy, and management of organisational change.

3.2 The traditional dimensions of Total Quality Management

The following is a list of what this study has considered traditional dimensions of quality management identified and described in the introduction of this chapter. It should be noted that three literature sources have been identified as the primary sources of information on this subject, namely the Baldrige Criteria (1992) Bowles and Hammond (1991) and the joint Ernst & Young and American Quality Foundation International Quality Study (1992).

- **Customer driven quality:** Procedures and practices which ensure that products and services are delivered with the objective of satisfying customer needs.

- **Leadership:** Company top management play an active role in creating strategies, systems and procedures for achieving superior quality, and they include quality within core organisational values and the corporate mission.

- **Continuous improvement:** The firm has procedures and processes established to ensure that incremental and ongoing improvements are made to products and services. This includes the application of analytical techniques, problem solving and project management amongst a range of other techniques.

- **Employee development, empowerment, participation and involvement:** The company has a comprehensive approach to education and training which includes quality standard, procedures and skills for quality improvement. Quality of worklife is also an important aspect of the quality system and is rigorously managed by top management as a critical process. The firm also includes quality improvement as an integral part of all employees day-to-day work and has remuneration, reward and recognition programmes established to promote quality improvement activities.

- **Strategic quality management:** The company's strategic planning and management approach includes quality planning as an integral component.

- **Quality information and analysis:** The company maintains an effective measurement system and comprehensive database of information on quality performance throughout the quality management system. This information is used dynamically to improve product/service quality. Quality auditing and inspection form part of this component.

- **Public responsibility:** The company addresses general community, societal and environmental concerns.

3.3 Detailed review of the traditional dimensions of the quality management framework

3.3.1 Customer driven quality

The International Study by Ernst & Young (Top Line Findings 1991:5) indicates that a customer focus is one of five areas considered to be critical in the successful implementation of a quality initiative The study claims that without a customer focus or a specific process for gathering customer information and responding to customer needs, a company will be unable to effectively identify performance gaps and engineer quality into its products and services. The international quality research by Ernst & Young suggests that, despite the professed importance of quality by many companies, few really design processes and procedures into their organisational structures to ensure a customer orientation. In fact less than half of companies surveyed by Ernst & Young made customer input an integral part of the strategic planning process.

Specific findings in this research indicates that German and Japanese businesses place more importance on incorporating customer research into the design of new products and services than do North American businesses. While 40% of businesses in Canada, Japan and the United States place primary (dominant) importance on customer satisfaction in strategic planning, only 22% of German companies do so.

A customer focus is also a key component of most of the major recognised quality models (see Models of quality management, Chapter 2) The Malcolm Baldrige Quality Award approach allocates the greatest weighting on this aspect of the quality system (Hodgetts 1993:21). Baldrige examiners focus on whether the company

segments its customer base on the basis of a comprehensive needs analysis, whether customer surveys are conducted, how the sales process is performed, the existence and use of telephone hot lines for customers, customer focus groups and how the information gained from these sources is used to improve product and service quality. Information from these sources must be based on sound, objective data and not simply on anecdotal evidence. The Baldrige also looks at how lost customers and customer complaints are dealt with.

The Baldrige places emphasis on how companies identify customer needs, what they like and dislike, and how the firm responds to this information. Clearly a company may collect and analyse this type of information very well, but if it is not used to improve then the efforts are wasted.

The importance of this customer orientation is given by Hodgetts (1993:22) where Xerox identified that a customer who was assessed to be "*very satisfied*" as opposed to just "*satisfied*" through their customer satisfaction surveys, was six to seven times more likely to re-purchase its products. The goal of Xerox is to have "*100 percent very satisfied customers*".

Feigenbaum (1986:8) describes the "*meaning of quality*" as an "*orientation to customer satisfaction*". Feigenbaum qualifies this (1988:9) by adding that in the phrase "*quality control*", the word quality does not have the popular meaning of "*best*" in any abstract sense. To industry, it means the best for satisfying certain customer conditions, whether the product is tangible (a motor vehicle, a refrigerator, a microwave oven) or intangible (bus route schedule, restaurant service, hospital care). Feigenbaum takes customer satisfaction further to include the fundamental element of cost associated with customer satisfaction; "*The aim ... is that quality which establishes the proper balance between the cost of the product and service and the customer value it renders*".

The concept of value is one that is not extensively discussed in the traditional quality literature and therefore has been placed in the following chapter which deals with the evolving dimensions of quality management. Feigenbaum is one of the earliest so-called gurus of quality and yet recognises the concept of value in his more recent writings.

Imai (1986:207) is another of the quality gurus who places a high focus on the customer; "*All of management's efforts boil down to two words: customer satisfaction*". Crosby (1984) on the other hand, in his internationally known text "*Quality Without Tears*", does not heavily emphasise a customer focus at all. Crosby documents four "*absolutes of quality*" of which the first *is "The definition of quality is conformance to requirements*", but nowhere in this chapter is it emphasised that these requirements must be the customers.

The importance of a customer orientation within a quality programme is emphasised by *The Economist* publication (1992:69) in their description of Florida Power & Light (FP&L) an American electrical utility company who were the first non-Japanese winners of the coveted Deming prize in 1989. FP&L had an 85 employee quality department, 1 900 quality teams involving three-quarters of its employees, and a rigorous quality review system - by any standard a comprehensive quality system - with one deficiency. As *The Economist* writes:

> *But while customers saw some improvements in the quality of its services, these were insignificant when set against the sheer scale of the firm's quality effort. To a large extent, FP&L was simply going through the motions ... employees seemed as interested in the appearance of quality as in quality (customer satisfaction) itself ... FP&L's head of quality is clearing up the mess. The quality department*

now has only six employees; most of the quality teams have been disbanded; the whole process is a lot less rigid. Customers now count for everything.

The Economist goes on with the example of British Telcom's quality programme launched in the late 1980's which ran into problems early on in its quality system implementation in that it failed to focus on customers. *The Economist* quotes Jim Weber, a quality manager with Allen Bradley, a US$ 1.4 billion company which fell into a similar trap In the 1980's the success of its quality programme was only measured against short-term financial results rather than against customers' expectations. With this approach yielding poor results the company decided to adopt a customer orientation. *The Economist's* article does not however indicate whether this change had any real impact on profitability.

A focus on the customer is considered quite consistently by writers and practitioners as the centre-piece of a quality programme. Chang (1993:25) also comments in an article labelled "*When TQM Goes Nowhere*" that a key deficiency in TQM programmes is a focus on the activities involved in quality management rather on what customers really want.

Further highly visible companies are highlighted in the literature to demonstrate the impact of not focusing on the customer. A good example is that of Mercedes Benz, the famous German automaker which has a reputation for superior quality (Taylor 1993:36). Taylor explains that customers were very quick to react to the Japanese's introduction of high quality, lower priced luxury cars. In particular, Toyota and Nissan respectively produced their Lexus and Infiniti models demonstrating an ability to produce comparable cars to Mercedes better for less money. The problems began to appear in Mercedes' abilities to achieve superior quality, which came *"not from superior engineering but from squads of white-coated technicians fixing glitches at the end of the assembly line"*. Taylor continues to explain that the Japanese - and

Americans - are improving at eliminating defects, Mercedes is losing ground. In fact Mercedes finished tied for seventh (with Buik and Nissan) in the latest J. D. Power & Associates Survey of new car quality. Taylor explains that Mercedes is undergoing a total redesign in order to catch up with its Japanese competitors. From a customer focus point of view, Mercedes will be using market research to determine the quality/cost ratio of vehicles before the vehicle is engineered.

Nike, the sports footwear manufacturer, has come to recognise the importance of a customer focus. Willigan (1992:91) in a *Harvard Business Review* interview with Nike CEO Phil Knight, writes that Nike once had a significant focus on its customers, lost it to some degree when they began to expand, and as a result came under threat as competitors began to eat away at certain market segments. Phil Knight describes the experience as follows:

> *In the early days when we were just a running shoe company and almost all our employees were runners, we understood the consumer very well ... We and the consumer were one and the same ... We used to think that everything started in the lab. Now we realise everything spins off the consumer.*

3.3.2 Leadership

A survey conducted by Bowles and Hammond (1991:153) investigated forty Malcolm Baldrige Quality Award examiners. They were asked to name the most significant weakness identified in Award applicants. Examiners collectively identified this weakness as the "*failure to match actions to words about leadership*". This is not the only study that shows a gap in the need to "*walk the talk*". Bowles and Hammond (1991:153) cite an ASQC Gallup Survey in which employees were asked to rate the degree to which top management follow through on what they say is important; only 36% gave their companies a 100% rating for follow-through. Baldrige examiners

noted the most common action taken by a CEO after voicing commitment to quality was to turn responsibility over to a division president, vice president or steering committee without further substantive personal involvement. For a major corporate philosophy or strategy, this clearly sends a powerful message to employees - the strategy is not important enough to affect top management.

3.3.3 Continuous improvement

While different companies approach quality improvement in many different ways, the use of continuous improvement appears to be consistent amongst the leading quality companies - so indicates Hodgetts (1993:99) specifically of the Baldrige winners. Hodgetts describes a range of traditional continuous improvement tools and techniques, such as statistical process control, employee involvement and brainstorming, employee feedback and supplier feedback.

Jablonski (1991:5) describes continuous improvement as capitalising on many small, incremental gains as the steps toward achieving superior quality. Continuous improvement recognises that substantial gains can be achieved by the accumulation of many seemingly unimportant improvements whose aggregation produces major gains over the long run. Continuous process improvement reinforces a fundamental principle of TQM, says Jablonski, namely a long-term focus. Corporate leaders must be willing to make an investment in quality upfront, recognising that big improvements will be achieved in the future. Jablonski however does not include innovation or any strategy related to significant improvements under his definition of TQM.

The differentiation between continuous improvement and so-called step changes, as will be described in greater detail in the next chapter, certainly appears to be an area of evolution in the concept and application of TQM. Whether it is considered part of a

quality strategy or part of an overall business improvement strategy, techniques for massive improvements in business performance are increasingly being seen as fundamentally important. Even the Malcolm Baldrige Award structure includes process innovation as an integral partner to incremental improvement. Hodgetts (1993:99) describes this evolutionary step in his description of what might be considered traditional TQM activities, and touches on process innovation which is discussed in more detail in the next chapter which deals in more detail on issues which go beyond the traditional boundaries of TQM.

Hammer and Champy (1993:49) differentiate continuous improvement from the improvement strategy of "*reengineering*" and describe continuous improvement as the framework in which a company analyses its existing processes and seeks to enhance them by means of what the Japanese call *kaizen*, or continuous incremental improvement. The aim, as defined by Hammer and Champy, is to do what the company has always done, only to do it better. The key difference between the reengineering approach described by Hammer and Champy is that quality improvement aims at steady incremental improvement to process performance while reengineering seeks major changes in performance. This subject is dealt with in greater detail in section 4.2.3.

Imai (1986:xx) describes *kaizen* simply as: " ... *improvement. Moreover it means continuing improvement in personal life, home life, social life, and working life. When applied to the workplace kaizen means continuing improvement involving everyone - managers and workers alike*". Imai includes in his definition of "*improvement*" the concept of innovation. He points out that with a broader definition, improvement can be defined both as *kaizen* and innovation, where a *kaizen* strategy maintains and improves work processes through small, gradual improvements, and innovation aims at radical improvements through large investments in technology and/or equipment. Imai (1986:xxx) criticises the historical

American dependence on innovation for business competitive advantage versus a *kaizen* approach. But he believes that the era for innovation as a primary strategy is gone, while American management has been slow to take advantage of *kaizen* or incremental improvement approach. Imai goes on to say, however, that this does not mean that innovation can or should be forgotten. Both innovation and *kaizen* are essential if a company is to be successful. In Chapter 4 it will be seen that Imai's views about innovative change as being an outdated primary change strategy used by the Americans will be challenged. Indeed, a number of authors argue that it is precisely major innovation change that will be required for corporate success in the future.

This is just as well since the PIMS data provides convincing evidence that companies which have achieved superior quality and therefore high ROI, have achieved this position through innovation (Robinson 1986:317). It should be noted, however, that while the term "*innovation*" is used by these various authors, their meaning of the term may differ substantially.

What these views appear to demonstrate is some lack of clarity in the use and timing of incremental versus innovation or major improvement strategies. Bolwijn and Kumpe (1990:53) show that the relationship between strategies of quality improvement to flexibility and innovation appears to have a logical progression in studied companies. This implies that it is not simply an issue of whether to use *kaizen*, innovation or others, but when and in what sequence they should be applied.

It is clear from this description that progress in thinking on this subject has been substantial since the mid 1980's. The relationship between incremental improvement strategies and innovation or major "*step*" changes has been much more clearly defined, as will be discussed in later sections.

3.3.4 Employee development, empowerment, participation and involvement

The model of the "*quality company*" in the near future, suggest Bowles & Hammond (1991:87) *"may not be a company at all in the business sense, but (like) a small troupe of Australian performers who call themselves Circus Oz"*. Bowles and Hammond describe the case of Circus Oz as a truly remarkable (magical) small company, built on trust and mutual respect, in which each person is clearly responsible for the quality, creativity and productivity of his or her own work, and totally involved and committed to the success of their company as a whole. Through a participative management approach the Oz company is able to solve problems that normally many American corporations today are not able to come to grips with, namely how to *"do more with less; how to be the best - the Greatest Show on Earth - with limited resources"*.

The emphasis on empowerment and involvement for the achievement of superior quality and performance is central to many writers and researchers on the subject of quality. Indeed, it appears to be a key aspect of growth in the concept of quality. Bowles and Hammond (1991:88) show that in the face of growing competition domestically and internationally quality-driven organisations are turning away from top-down command and control style management practices and moving increasingly to empowering their employees to be become involved in the success of the organisation. Companies are working with the assistance of labor unions to create work environments in which employees are able and encouraged to participate in decision making that will directly and indirectly affect their jobs.

The concept of employee primacy philosophy has also been noted amongst leading Japanese firms. Bowles and Hammond (1991:89) comment that transferring an exact replica of Japanese-style participative management to other countries would be

undesirable, if not impossible. However, certain of these management philosophies which have been used with success in the United States are:

- Management rely on the wisdom of people at the bottom of the organisation.
- Motivation and commitment of the majority are more important than the motivation and commitment of a few.
- To motivate the majority, jobs must be secure and the differences in rewards minimised.
- To cope with change, the labour force should be flexible, job classifications should be minimal, and employees should have versatile skills.
- Information should be shared (freely) among the members of the organisation.
- The implementation of a strategy is more important than its formulation.
- Employees are active participants in the organisation and they should therefore share in its fruits.

The road towards employee primacy appears to be gaining momentum in the United States. As is so common, say Bowles and Hammond (1991:92), the change in concept away from the command and control tradition is a difficult one.

Bowles and Hammond (1991:157) note in their study into American companies that leading innovative companies tend to empower their employees. Empowerment is a vital concept in building a quality organisation. Empowerment provides employees with the authority, resources, skill and self-confidence to identify opportunities and problems, and to make the appropriate business decisions. Bowles and Hammond note further that a company whose employees are improperly trained, are not informed about corporate strategy, and have little authority to act within reasonable parameters cannot achieve superior quality.

It appears that the concept of empowerment is often misunderstood by management. Bowles and Hammond (1991:158) comment that the idea of empowerment and participation often terrifies managers, who often see it as reducing their authority, which is a misperception. Empowerment, rather than reducing management control, requires that management create and communicate goals that can motivate employees and which employees can rally around. They can then jointly define the strategies for achieving these goals.

The Baldrige framework allocates 15% of its one thousand points to employee development. It receives the third highest allocation of points (Hodgetts 1993:20). The key focus is on whether the company can show it is tapping the potential of its employees or whether it is stifling initiative through unnecessary rules and regulations. Empowerment is the major subject of attention in this category of the Baldrige: *"Are employees empowered to use their initiative and authority?"*

The Baldrige also looks at the authority of employees to deviate from policy and procedures in order to improve customer delivery times, for example, or for shop floor employees to stop the assembly line if they detect quality problems.

Training programmes are also a major component of the Baldrige. The training of skills in problem solving, group process skills and job specific skills are looked at, as well as how effective these training courses are. Baldrige winners typically spend a greater percentage of their budget on training than do other firms, and these programmes combine skills training with real-time problem solving and feedback on improving the training process.

Bowles and Hammond (1991:155) also note that amongst the Baldrige award entrants, a failure to involve employees is an area of weakness amongst poorer performing companies. The most disturbing finding is that of a lack of quality related

objectives in human resources departments of Baldrige entrants. According to the ASQC/Gallup Survey, the national average is 66% employee participation in companies that have a quality improvement programme; indications are that Baldrige winners have a 10 to 15% greater involvement. A goal of 75 to 80% participation is well within striking distance of those companies striving to win the Baldrige. In comparison it appears that leading Japanese manufacturing companies have achieved total involvement.

The Ernst & Young/American Quality Foundation International Quality Study (1991:7) finds businesses in all countries except Japan plan to increase their involvement of employees in quality related activities largely because Japanese companies demonstrate the highest rate of widespread participation by employees in quality improvement efforts. The Ernst & Young report (1991:8) continues to show that contrary to current thinking in many parts of the world, Japanese businesses indicate that they do not necessarily involve their entire workforce in quality related teams. Approximately 64% of employees in typical Japanese companies appear to be involved in quality teams of various types. This finding raises the possibility that quality may have become such a fundamental part of Japanese culture that the need for formalised team efforts to motivate quality improvement amongst employees is diminishing.

3.3.5 Strategic quality planning

As noted in the first chapter of this study, the sixth phase of quality, in historical terms, has been labelled "*total quality management*". This 1980's phase is most characterised by a business strategic planning component. The emphasis here is that quality leadership become a primary component of competitive advantage and make a direct and measurable contribution to business profitability. Clearly strategic quality planning has become important only within the last decade. It was noted in Chapter 1

(section 1.1.2) in the summary of the evolving stage of quality management that Feigenbaum (1988:17) one of the earlier pioneers of total quality management, considers that in recent years quality has for the first time become a *"significant factor ... in business strategic planning"*. It was also stated in that section that Garvin (1991:91) another more recent pioneer in this discipline, notes that in most leading companies he has investigated quality planning is indistinguishable from overall business strategic planning.

The Baldrige's focus on strategic planning for quality is not as integrated with business strategic planning as Garvin indicates. Baldrige places importance on whether a firm has well structured goals for quality improvement (Hodgetts 1993:19). However it is important that the quality strategic plan dovetail with the overall business plan.

Possibly the most comprehensive link between quality and the process of strategic planning has been identified and created by the PIMS research. The PIMS research has demonstrated a high relationship between superior relative quality and organisational profitability (Gale & Buzzell 1989:68). Robinson (1986:297) discusses the rationale for the PIMS research in that although theory on strategic planning is common, there has in the past been little empirical validation of its benefit to business success. However, the PIMS database does provide data for empirical testing for existing and new theories in strategic thinking. It provides data on diverse strategic experiences for many successful and unsuccessful companies in different strategic positions in various markets over a lengthy period of time, and thus provides strong substance for the formulation of strategy in a variety of circumstances.

The PIMS research has identified nine major strategic influences on profitability and net cash flow, namely quality products and their associated services, investment intensity, productivity, market position, market growth rate, innovation or

differentiation, vertical integration and the effect of costs and strategic effort (Robinson 1986:298). These data alone are compelling evidence for ensuring that the integration of quality planning and business strategy become a major aspect of quality programmes and strategic planning in the future.

3.3.6 Quality information and analysis

The Malcolm Baldrige National Quality Award 1992 Award Criteria booklet (1992:14) defines this area as the:

> ... *scope, validity, analysis, management, and use of data and information to drive quality excellence and improve competitive performance ... adequacy of the company's data, information, and analysis system to support improvement of the company's customer focus, products, services, and internal operations.*

The Baldrige criteria (1992:15) describes the scope of this category in greater detail as follows:

- The scope and management of quality and performance data and information. It is important that a company has appropriate depth and breadth of quality related data to ensure that its quality process is managed by "*fact*" and not by management "*gut feel*". Data should be focused appropriately on the major areas of strategic focus of the company. Key areas of measurement should be designated, such as overall company performance, service quality and core process cycle time.

- Competitive comparisons and benchmarks. It is important for the company to identify key processes or areas in which it must perform well and collect data to benchmark itself against competitors and/or world class players. To perform well in this area companies must ensure sound logic for the selection of what to

benchmark, with whom to compare and how to perform the benchmark measurement.

- Analysis and uses of company level data. Clearly the bottom line for information and analysis is the degree to which these data are effectively used to improve performance.

Analysis of this type is discussed under section 4.2.1 in which PIMS analysis presents a convincing demonstration of the effectiveness of analysis.

3.3.7 Public responsibility

It could be argued that public responsibility is an evolving dimension of quality management rather than a traditional component, since this subject is not fundamental to many of the literature sources identified in this review. For example, of the quality *"gurus"* reviewed, Feigenbaum (1988) is the only one who comments overtly on the subject of a responsibility to society as a consideration, and then it is only a short paragraph in an 851 page tome. It must be emphasised that this does not mean these experts do not, or have not, supported or documented theories on social responsibility - it is only to give perspective to the apparent relative importance of the subject compared to other aspects of quality management. Feigenbaum (1988:24) comments that quality management contributes to society by improving the availability of safer products, both for the user and the environment, lower cost products thus improving the utilisation of scarce resources on the planet, and in conservation and waste reduction.

The Baldrige criteria do include social responsibility as a core value (Malcolm Baldrige National Quality Award, 1992 Award Criteria 1992:4) and define it in the following way:

These include business ethics, public health and safety, environment, and sharing of quality related information in company's business and geographic communities. Health, safety and environmental considerations need to take into account the life cycle of products and services and include the factors such as waste generation.

The Baldrige criteria include the importance of maintaining public trust within its quality framework. In addition, companies should support - with reasonable limits of their resources - national, industry, trade and community activities to share non-proprietary quality related information.

3.4 Conclusions

The dimensions of quality management described in this chapter are thoroughly documented by many authors and experts on the subject, and are therefore listed here as traditional dimensions of quality management. With the exception of strategic quality planning as an integral part of business planning and social responsibility, most dimensions have been included in the traditional scope of quality management for a number of years.

The Malcolm Baldrige Award system includes strategic quality planning as an integral part of a quality system but this is not so recognised in a number of other major systems.

While being more recently recognised as an important part of a quality system, social responsibility is now accepted on a broader scale. Chapter 4 focuses on what appear to be the evolving dimensions of quality management.

CHAPTER 4

REVIEW OF THE LITERATURE
PART 2
THE EVOLVING DIMENSIONS RELATED TO AND AFFECTING THE SUCCESS OF TOTAL QUALITY MANAGEMENT

CONTENTS

4.1 Introduction

Various writers are beginning to recognise a shift in the concept of quality from the "*traditional*" management of quality to what has been labelled *"beyond quality"*. Bowles and Hammond (1991) in their text entitled "*Beyond Quality*" capture this trend most clearly, and are used as the primary source in this chapter. The authors identify this evolution through progress that American firms have made in their quality efforts over the past 10 years (1991:140). Already, the authors claim, there are signs that American quality improvement efforts are evolving away from attempts to directly copy Japanese techniques, assuming that they are the ideal. In many companies, they say, the scope of quality now encompasses more than simply

improving the quality of products and services. For example, DuPont no longer have a vice president of total quality management as in the past, now they have a vice president of continuous improvement, suggesting that the traditional definition of quality is too narrow to accommodate the change processes required by organisations in the 1990's. Bowles and Hammond continue (1991:140) that at Flour Daniel in the United States, the title of the old quality post is vice president of performance improvement. At IBM they have added the words "*market-driven*" to describe the company's quality improvement efforts. AMP and Milliken are still pursuing "*excellence*" as opposed to quality and new terms such as "*Six Sigma*", Motorola's slogan for quality improvement, are more commonly being used by companies who want to break away from the historical limitations and narrow definitions that the label quality seems to bring with it. The authors describe two main reasons for the movement away from a narrow quality definition and focus. One is the growing realisation that simply working on improving products and services is not, alone, enough to build sustainable competitive advantage. Evidence given by the authors are Ford and Caterpillar in the United States. Despite great profitability comebacks in the 1980's largely attributed to, for example, Ford's "*Quality is Job 1*" strategy, Ford and Caterpillar have again entered the 1990's struggling financially. Another example given is Florida Power & Light who has dismantled much of the quality bureaucracy that it created in its successful attempt to be the first non Japanese company to win the coveted Deming Prize.

The second reason is the realisation that people are the key to making continuous improvement work. While Japan's manufacturing techniques may be "*transplantable*", claim the authors, its approaches to people are not. American and Japanese workers have such radically different cultural profiles that transplanting Japanese human resources techniques into an American organisation without customising it to the culture of the American culture and the specific dynamics of the company simply cannot possibly work. It could be argued, based on this literature review, that Japan's

success model in business, and particularly quality, has been overstated. The unique attributes of the American work culture, described by the Japanese quality guru, Imai (1986:xxx) as the inappropriate focus on innovation versus incremental improvement, may be precisely the success model required in the future.

Bowles and Hammond (1991:141) quote James Fallows to demonstrate the difference between the Japanese and American cultures as they apply to achieving success in business. Fallows believes that Japan gets the most out of average workers by organising them to adapt to a long standing organisational culture and system. America, on the other hand, encourages success by "*getting out of the way*" of workers so that they can adjust as individuals; in other words allows them to succeed. It is not, as Fallows describes, that "*Japan has no individualists and America has no organisation*", but rather that the focus and nature of the two societies is different. Japan has structured its economy to keep the nature of work and its social values as steady as possible. America's strength on the other hand is the different in that it *"opens its doors and brings the world's disorder in. It tolerates social change that would tear most other societies apart. This openness encourages Americans to adapt as individuals rather than as a group."*

From this vivid description it could be argued that during the relatively stable decades of the 60's, 70's and early 80's, the approach to quality developed by the Japanese was the correct model. However, the nature of the business environment of the 1990's and beyond will demand a more dynamic and flexible approach to change - rather than incremental, more attuned to radical and innovation. The lessons from these examples are increasingly clear, that leading companies in the 1990s will have to go beyond the traditional scope of quality; "*you can't come to the table without it. But quality is not enough*" (Bowles & Hammond 1991:142).

Bowles and Hammond (1991:148) provide an explicit example of the results of a traditional quality process implemented mechanistically. This Deming Prize winning quality programme of Florida Power & Light was "*tearing the company apart*". The process had ignored a critical aspect of an evolved quality concept - respect for people, in which they are empowered to innovate, to identify and solve their own problems, without the fear that they are not following one accepted methodology. Bowles and Hammond (1991:151) feel that this is an example that a missing ingredient in traditional quality systems is empowerment for all employees to be innovative. From the overall context of Bowles and Hammond's text, the reader is left to imply that this evolving dimension of quality must be for workers to create their own change or improvements within the context of the organisations strategic focus and within the context of their own work.

Beer, Eisenstat and Spector (1990:159) continue this theme that traditional quality management programmes are inappropriate for the 1990's by stating that the reason why most change or improvement programmes do not work is because they are guided by a theory of change that is "*fundamentally flawed*". Interestingly Beer et al's findings contrast with Bowles and Hammond. While Bowles and Hammond (1991:151) identify the risk of implementing a traditional quality system without the human dimension of participative, innovative change creation for all employees, Beer et al identify the failure of change programmes in developing the soft human procedures without changing the structured environment in which people work. This contrast may suggest the most significant evolutionary step in the evolution of the quality concept, namely implementing a quality system as an organisational programme to achieve quality, but also to create innovative change in the organisation from top management level to grassroots level. Beer et al found in their research that organisational renewal is typically initiated at the "*bottom of the organisation*", through informal efforts to solve day-to-day business problems. According to Beer et

al (1990:160), change is not successfully initiated with corporate policy statements and the *"vision thing"*, but at the periphery of the organisation:

> *The common belief is that the place to begin is with the knowledge and attitudes of individuals. Changes in attitudes, the theory goes, leads to changes in individual behaviour. And changes in individual behaviour, repeated by many people, will result in organisational change. According to this model, change is like a conversion experience. Once people "get religion," changes in their behaviour will surely follow .*
>
> *This theory gets the change process exactly backward. In fact, individual behaviour is powerfully shaped by the organisational roles that people play. The most effective way to change behaviour, therefore is to put people into a new organisational context, which imposes new roles, responsibilities, and relationships on them.*

Bowles and Hammond (1991:91 and 1991:157) suggest that this *"organisational context"* is one of an innovation based quality process that structures the working environment to create organisational change. They identify the innovative characteristics of leading quality organisations which they have studied as follows:

- They are the best, or nearly the best in their industry.
- They are growing faster and more profitably than most of their competitors.
- They hire and are able to retain the best people.
- They respond quickly to changing market conditions.
- They are not satisfied with the status quo.
- They continually upgrade facilities, processes, and skills, once considered state of the art.
- They empower their workers.

- They are market and customer satisfaction driven.
- They view the world differently and continually challenge traditional thinking.
- They "*have big dreams*" and test new ideas.
- They make quality part of their corporate values and do not compromise their quality standards.
- They involve employees in the design of work.
- They learn from experience and tolerate failure which is in pursuit of quality innovation.
- They have a vision and a strategy to make it happen.

This conceptual model which separates winning companies from "*their run-of-the-mill brethren*" positions a quality process beyond the traditional model defined up to the 1990's. This model for quality goes beyond quality in that it becomes the organisational context that creates innovation and change - it creates the flexibility, agility and strategic thinking throughout the organisation to also look beyond day-to-day work, deal with uncertainty and ambiguity, and stimulate innovative change, not just in the boardroom, but throughout the organisation. Bowles and Hammond (1991:152) label this the "*Forward Quality*" stage in quality or continuous improvement. Forward Quality is characterised by innovation by all employees, a view to new markets and achieving customer retention and recruitment through building customer relationships based on trust. They claim that there are only a few companies that are beginning to discover that their firmly entrenched quality programmes have taken them to the next stage, namely, innovation and the creation of change by all employees.

4.2 Evolving dimensions associated with quality management

The introduction to this chapter mooted certain significant changes occurring in the concept and application of quality management. The following list details those

business practices which appear from the literature to be the evolving dimensions associated with the improvement of organisational quality and corporate performance. As has been noted previously it will be apparent that the practices below would not typically be considered part of quality management, however the essence of this study is to investigate the evolving scope of quality management which appears to have an impact on corporate profitability. If the scope of quality management significantly affects corporate profitability then a broad range of possible elements must be analysed and managed together. As in the traditional dimensions of TQM described above (Chapter 3) where a common set of practices form the basis of many of the better accepted TQM approaches, the following could be considered a possible future "*common*" set of practices which must be considered along with a comprehensive quality framework, if competitive quality, organisational flexibility and innovation is to be achieved:

- **The impact of quality performance on corporate performance:** While this is not necessarily a new focus, it is receiving renewed attention because of the perceived "*failure*" of TQM to impact the bottom line.

- **Performance measurement and benchmarking:** The concept of *the "balanced corporate scorecard"*

- **Core process management and process reengineering:** This phenomenon focuses on critical business processes and creating significant performance improvements as opposed to incremental improvements associated with traditional TQM.

- **Organisational structure:** This deals with the effect on TQM of the traditional functional organisational structures and bureaucracy and vice versa.

- **Teamwork**: This area deals with teamwork not simply as a tool for performance improvement, but as a fundamental element of organisational structure.

- **Organisational flexibility:** This relates to an organisations ability to rapidly respond to changing market and customer needs and external environmental pressures.

- **Management of change:** Many companies have developed so-called management of change processes. Some evidence suggests that there is an intimate link between quality management processes and change management.

- **Customer value:** This takes the concept of customer satisfaction, which is fundamental to TQM, a step further.

- **The use of technology in quality management:** While the use of technology has always been an important part of quality management, a number of writers noted in the next section, claim that it has been somewhat incidental. Clearly from the literature technology is now making a great impact on TQM.

4.2.1 The impact of quality performance on corporate performance.

Bowles and Hammond (1991:23) note that American business at the start of the 1980's was clearly in a quality crisis. Despite this situation, many American businesses simply failed to make the connection between quality performance and such critical measures of performance as cost, market share and profitability. This is despite the data presented and published by the PIMS studies (Gale & Buzzell 1989:6). Quality ranked so low on the hierarchy of corporate priorities, indicate Bowles and Hammond (1991:22) , that a survey of institutional investors done in 1985 showed the quality of a company's products ranked last as a factor in influencing stock selection. With this

evidence available it not surprising that the American business community was headed for trouble with the result that foreign competitors rapidly began to make significant inroads into industries historically dominated by American companies. Bowles and Hammond (1991:22) describe how the Japanese in particular eroded America's lead in key industries. The steel industry, for example, once the largest and most efficient in the world, suffered enormous declines in earnings and market share between 1975 and 1985. In 1964 the United States was a net exporter of machine tools, today it imports more than half. In the 1980's the United States' share of the semiconductor market fell from 60% to 40 percent.

The most tangible link between product quality and corporate profitability was established in the later 1980's by the Profit Impact of Market Strategies (PIMS) studies, referenced above, conducted by Strategic Planning Institute in Massachusetts in the United States, who demonstrated that market perceived quality dominance was the definitive factor in driving profit margins (Gale 1992:5). Gale (1992:5) comments:

> *Analysis of 25 years of confidential data from major U.S. and European corporations has shown that the brands that achieve superior profitability are those that convinced customers they offer superior quality. Customer perception of quality correlates closely with profit margins. Brands with superior quality earn net margins that are nearly four times as high as those perceived to be inferior. In fact, quality is a more fundamental driver of competitive position and business results than any other factor - market share, position on the learning curve, low costs or the growth of the served market - so often touted by strategy gurus ... For many years the majority of U.S. managers - and the majority of management experts - ignored the central importance of quality. Many still do today.*

Gale provides examples of companies who have destroyed corporate profitability by reducing quality and relative perceived quality, while others have substantially increased market dominance and profitability through the increase in relative perceived quality. The PIMS results show that companies who advertise their quality advantage commanded substantially higher prices and achieved on average 30.5% return on investment, while those that with low advertising intensities commanded lower prices and achieved on average 18.1% return on investment. This relative perceived quality characteristic supplanted the earlier view that high market share was the key factor. More recent findings suggest that relative perceived quality is first the driver of high market share which in turn leads the improved profitability. Gale (1992:8) emphasises that it is not simply customer satisfaction which is the definitive factor, but relative perceived quality relative to competitors' products.

Robinson (1986:315) quotes Schoeffler and Badler (1981) saying that high quality products are most profitable. The impact of relative product quality is greatest at the extremes of high and low relative product quality. In other words, superior relative quality improves return on investment (ROI) significantly more than average relative quality, and very poor relative quality affects ROI significantly more than moderately poor quality. Clearly from the data presented by Robinson, the probability of achieving a high return on investment improves with relative product quality. It should be noted that when Robinson refers to "*product*" quality, this includes the vital perception of the service associated with that product, which is implied by Buzzell and Gale (1987:117). This review of the literature was unable to identify data correlating quality performance in service industries with corporate performance. This again supports the need for this research study.

Robinson (1986:315) continues that although it may appear that it costs more to produce and service high quality products, the additional effort is more than offset by

improvements in profitability, improved pricing and higher gross margins. This assertion by Robinson does support the title of Crosby's text "*Quality is Free*" (1979).

The following issues related to product/service quality and profitability were identified by Robinson (1986:317-323):

- Producers of premium quality products are able to charge premium prices and achieve premium margins (Robinson 1986:317).

- Quality appears to be an important influence on profitability in almost all markets and competitive situations, for example, in businesses with both high and low degrees of capital intensity; for businesses that are extensively vertically integrated as well as non-integrated businesses; and for businesses in both stable and growing markets.

- PIMS data suggest that high quality is often the result of innovation related to early market entry and the development of distinctive designs and formulations.

- High quality is especially profitable in concentrated markets. This is probably due to the greater difficulty of consumers to differentiate between many products and services in fragmented markets (many competitors and products) whereas with few competitors quality differences become far more noticeable.

- A high marketing spend damages profitability when quality is low. Robinson (1986:320) comments that this appears to suggest that a high marketing spend that does not result in an improved quality perception is wasted and *"there is some evidence that businesses that climb on their dung heap and crow about inferior products do worse than if they had kept quiet. The consumer attracted by high advertising adspend, tests the product and votes with feet and purse."*

- New product innovation is unprofitable when introduced by businesses with a low quality image. Further to this, while high levels of product innovation reduces profitability in all businesses, its impact is the lowest where product quality is high. The combination of high levels of innovation and low quality is disastrous.

- Businesses which do not add significant value to the products they market, need high quality for acceptable profitability. High product quality improves profitability at all degrees of value adding companies, but the impact is greatest for low value adding businesses. High value adding businesses seem to do acceptably well even with lower quality levels. Robinson comments that *"low quality accompanied by low value added seems to be a recipe for disaster"*. Robinson (1986:321) continues; *"this implies that the quality assessment of the product and its associated services is even more vital for service businesses such as banking and retailing than for businesses with high value added"*.

- High quality leads to high gains in market share regardless of pricing strategy (premium or low price). However low pricing improves gains in market share (not necessarily profitability) regardless of quality. The highest gains in market share occur with the combination of high quality and low price). Concerning the comment in parenthesis above, a key question is then, how much profitability is lost when pricing low to gain market share? A possibly surprising answer is given by Robinson (1986:323); no profit penalty is incurred and businesses which appear to keep prices low while delivering quality seem to gain in both market share and return on investment.

The 1990's may have ushered in a new paradigm of performance relative to quality as a dominant competitive factor. Jack Welch, chief executive of the United States company General Electric, claims that with the worldwide recession, combined with the development of overcapacity developed in the growth era of the 1980's, low price

and value combined the highest possible quality is the required combination for the 1990's. *Fortune* quotes Welch who believes that as competitive pressure intensifies the pressure on profit margins will greatly increase. Only the most productive companies will make it through the very difficult economic times ahead. Companies which cannot sell top quality product at the lowest prices, are going to be "*out of the game*". The end result of this pressure on companies is a benefit to the marketplace in the form of enhanced value. (*Fortune* 1993:68).

A study commissioned by the United States congress and conducted by the United States General Accounting Office into the performance improvements of applicants to the Malcolm Baldrige National Quality Award, reports that companies that adopted quality management practices experienced an overall improvement in corporate performance in terms of higher productivity, greater customer satisfaction, better employee relations, increased market share and improved profitability. Unfortunately the study did not include a control group to assess whether similar companies in similar conditions but without formal quality management systems in place performed worse. Indeed the actual results reported, in the view of this researcher, do not appear to be remarkably better than what one might expect from any reasonably performing company (United States General Accounting Office 1991:2). A possible reason for this less than stellar performance is debated by Schaffer and Thomson (1992:80) where they claim that "*The performance improvement efforts of many companies have as much impact on operational and financial results as a ceremonial rain dance has on the weather*". This "*rain dance*" is often in the guise of a total quality management system, claim the authors.

The primary reason for this lack of performance is a focus on the activities of quality management rather than being results oriented. This is precisely the argument that certain critics have of the Baldrige system - that it places too much focus on quality activities rather than specific quality performance results to be achieved. Activities

then are then focused around achieving these results. Imai (1986:16) contests any single-minded focus on results, and claims that Japan's success in quality and business performance is that Japan is a process-oriented society, while the United States is a results oriented society. *Kaizen*, says Imai, generates process-oriented thinking, which is necessary since every process must be improved before results can be achieved.

The Schaffer and Thomson report (1992) cites the 1991 study in which 300 electronic companies with quality systems surveyed had failed to improve quality defects by even as much 10% - not dissimilar to the GAO study. The implications from this evidence is significant - while quality management systems are vital for competitive advantage in the future, the system must be geared to achieving very specific and customer focused results, in particular relative market perceived quality and, in turn, profitability.

Further evidence of "*cracks in quality*" is reported by consultant Arthur D. Little in a study of over 500 American manufacturing and service firms in which it was found that only one third felt that their quality programmes were having "*significant impact*" on their competitiveness (Economist 1992:69). The same report notes an British study in which only 20% of companies interviewed believed their quality programmes had had tangible results. Suggested reasons for this situation according to the report include:

- Quality programmes focused on internal definitions of quality rather than customer perceived quality.

- Large quality bureaucracies in which responsibility for quality performance is not with line management and employees. Essentially workers are not empowered to take responsibility and are happy to leave this task to the quality function.

- Parochial barriers between functional areas which make it difficult to deal with multifunctional process quality problems, of which most critical processes are.

- Quality systems that do not focus on achieving results, but rather get bogged down in the mechanics of the system - reference is made to the Baldrige approach.

- The belief by top management that results will be immediate, and back-off entrenching quality activities prematurely: Comment is made that in relative terms, American companies have limited experience with formal quality systems (less than a decade in most cases) whereas most leading Japanese firms have been had systems firmly in place for over thirty years.

4.2 2 Performance measurement and benchmarking

The critical factors for corporate success at the turn of this century bear little resemblance to the rapidly changing environment in which businesses find themselves today (Lothian 1987: preface). Various writers suggest that accounting and performance management practices have not adequately kept pace with the rate and complexity of change during the latter half of this century.

Segal (1992:16) holds that businesses in South Africa particularly are under pressure to "*make a leap*" in performance measurement practices, because of the significant change being experienced in the external environment. University of the Witwatersrand Business School Director, Nick Binedell argues that *"while financial criteria are important, the emphasis is away from hard financial and operational indicators. These are more important to sustain performance than short-term performance alone."*

(Note: Finance Week are developing and testing, at time of writing, a comprehensive framework for assessing corporate performance in an attempt to identify the most applicable mix of "*hard and soft*" criteria in the South African context.)

The migration away from traditional accounting measurement of corporate performance is further supported by Glad and Dilton-Hill (1992:232) in which they quote David Allen, Financial and Management Accounting Committee representative on the International Federation of Accountants (IFAC): "*Perhaps there was a time when people thought that ratios like earnings per share or return on assets were good indicators of performance, but this is no longer the case.*"

Performance measurements recommended by Glad and Dilton-Hill (1992:232) clearly demonstrate the beyond quality perspective supported in this research. Quality, productivity, time from concept development to market, delivery time, core process cycle time, flexibility/adaptability and identification of waste are noted as the primary components of a balanced performance measurement system (PMS) along with the traditional financial performance criteria. Interestingly the authors describe these measurements as being discrete and separate dimensions of performance, where it is clear from previous analysis of the evolution of quality management that all of these performance criteria would be considered central to the definition of quality management and its expression in terms of customer needs. The specifics of the above performance criteria would naturally be specific to the individual company and its competitive circumstances.

It is important to note at this point the risk of an over-emphasis on the "*softer*" performance criteria in a total PMS mix. It has been indicated in a previous section that it is possible for a company to demonstrate significant success in quality performance, even in broad definition, for example the Malcolm Baldrige Award criteria, and still be unprofitable (Bowles & Hammond 1991). A specific case in point

being the 1990 Baldrige Award winner, Wallace, the Texas based pipe and valve distributor, who have since shown a significant drop in profitability and have retrenched employees. Clearly, at this stage in the evolution of strategic quality management, current criteria for measuring performance are inadequate for assessing all dimensions of company success. It should be noted that in a personal exchange with Dr. James Harrington (1987 & 1991) Harrington commented that the use of the Wallace company as an example of a failure of quality management is entirely missing the reality of the Wallace Company's situation. The reality for this company's demise was related more closely to the severe impact of the oil industry's economic crisis (to which Wallace was a supplier) and Wallace "*taking its eye off the ball*" during this crucial and difficult time.

The International Quality Study (Ernst & Young, Top Line Findings, 1992:4) indicates that the inclusion of quality performance is not a regular part of the performance evaluation process of many the companies studied. Quality is neither measured universally at the organisational level, nor is it linked to executive assessment and compensation, while Japanese companies in the sample are far more likely to closely monitor quality as a critical corporate performance area. The study does suggest that future trends are for researched companies in all countries to include quality as a key performance criteria. The research report comments that until recently the quality efforts of most companies have focused more on reducing internal costs through improvement processes rather focusing on quality as a driver of improved overall financial performance and profitability. Quality programmes have tended to report independent financial results rather than being integrated into the overall financial reporting and accounting systems of the organisations. The authors feel that this integration with the normal financial reporting of the company is essential (1992:11).

Bowles and Hammond (1991:154) quote from the ASQC/Gallup Survey that 60% of Baldrige examiners studied found weaknesses in the area of benchmarking, a key area of quality performance measurement. The concept of benchmarking appears to be misunderstood by most companies. Several of the Baldrige examiners noted that benchmarking was more prevalent in manufacturing companies than service companies who did not appear to have a sense of an external standards of quality.

4.2.3 Core process management, process benchmarking and process reengineering

The functions of core process identification and process reengineering are possibly the most significant business improvement strategy to emerge as a formal process from the quality movement in recent years. Viewing the organisation as a series of interdependent processes is an evolutionary step from the Value Chain organisational view put forward by Michael Porter, except that in the core process case the organisation is viewed as a grouping of cross-functional core processes rather than groupings of business functions (Kaplan & Murdock 1991:27).

No single author, identified in this review of the literature, linked PMS with all the functions of core process identification and analysis, benchmarking and reengineering, however the thread can be traced quite clearly. The sequence implied from the authors reviewed is as follows:

- Identify the core processes for the organisation that are truly central to its competitive success (or should be).

- Benchmark these against the best performer available, irrespective of industry.

- Develop specific core process performance objectives.

- Reengineer the processes if major performance gaps are found, or if major opportunities exist;

- Develop appropriate performance measurements for the core processes (Kaplan & Murdock 1991:35).

Kaplan and Murdoch (1991:30) define a core process as work streams which are "*focused on one or more of the strategic objectives that determine competitive success. Stated in terms of time, quality (product or service) and cost, they (core processes) could be faster time market, improved on-time delivery, or reduced administration costs.*"

Core process analysis does not attempt to assess all major processes within an organisation, rather the challenge is to identify only those processes that define the company's competitive advantage. Examples of core processes are:

- New product development
- The marketing and sales process
- Product delivery
- Customer relationship management
- Customer complaint handling
- Customer billing
- Company image management

A company will typically have no more than between three and six core processes that truly define its competitive success if the definition of core processes is correctly applied, and depending on the nature and size of the company (Kaplan & Murdoch 1991:30 and Gulden & Reck 1991:2). Davenport (1993:28) believes that major

processes should typically number between 10 and 20. IBM has identified 17, Xerox 14, and British Telcom 15.

The appropriate identification of core processes is crucial to the effectiveness of the benchmarking process, and indeed the quality management/reengineering system itself. This is because only core processes should be benchmarked.

An example of core process identification, benchmarking and process reengineering is provided by Hammer (1990:105) in which Ford Motor Corporation during the motor industry recession of the 1980's identified as one of its core processes, their accounts payable process. Ford felt that a 20% reduction in headcount in the 500 accounts department employee complement could be achieved through rationalisation of processes and the installation of a new computer system, and were optimistic about these goals until they looked at their Japanese partner, Mazda. While Ford was aspiring to a 400 person department, Mazda's accounts payable organisation consisted of a total of 5 people. While the difference in absolute numbers was high, after adjusting for Mazda's smaller size, Ford still determined that their accounts payable department was five times the size it should be. With the result the Ford reengineering team managers upgrades their goal from one hundred, to several hundreds fewer employees. With this new benchmark and mindset Ford did not accept the modest increases it first considered possible, it set goals for major change and achieved significant improvements. Hammer comments that where Ford has instituted new processes it has achieved a 75% reduction in head count, not the 20% it would have initially have achieved with an incremental improvement approach. Clearly a traditional, narrowly defined TQM oriented continuous improvement approach would be unable to deal with scenarios such as described by Hammer.

While it may be true that traditional TQM would not be capable of dealing with the dimensions of change as described by Hammer, it should be recognised that

organisational change of the order described by Hammer, and much greater, has been conducted in large organisations around the world, even in South Africa for many years - and without the benefits of formal reengineering. Possibly the major difference between the change of the past and the reengineering approach defined by Hammer is the formalisation of a methodology of large scale change

In Hammer's Ford example above, benchmarking was conducted against a competitor and therefore an indepth internal analysis of Mazda's accounts payable system was not possible, however in a more ideal situation benchmarking would take place outside of the competitive industry and with the best available performer for the core process available. Walleck, O'Halloran and Leader (1991:17) find that the most valuable benchmark comparisons come from outside the industry.

The benchmarking process is not simply a "*hands-in-the-pockets walk through*" tour of another organisation's plant or facility (Walleck et al 1991:18). After the comprehensive industry and internal analysis required to identify core processes (i.e. what to benchmark) appropriate companies to benchmark against must be identified. This is often a lengthy process. Research literature, industry analysis, customer research, and utilising the services of external consultants in this area are the best ways of identifying benchmarking candidates.

Specialist benchmarking teams must then be assembled to prepare for the benchmarking visits and ongoing often extended analysis. Walleck et al (1991:19) gauge between four and nine months for a comprehensive benchmarking investigation depending on the complexity of the process being analysed. Once the analysis process is complete the process reengineering phase begins.

The International Quality Study by Ernst & Young and The American Quality Foundation (1991:6) appears to consider benchmarking only in the context of

competitor analysis and describes the role of benchmarking as increasingly important as global markets emerge and the need to identify key areas of competitive advantage becomes accordingly more critical. Benchmarking product and service performance features should become an integral part of a businesses formal strategic planning cycle to provide clues not only to the relative strengths of particular competitor products and services, but will also provide insights into, for example, the speed with which competitors are capable of bringing new products and services to market, or the way in which they vary features, style, technologies as well as other performance criteria considered vital to success in a particular industry.

The Ernst & Young study (1991:6) continues to note that one third of United States and Japanese businesses, one fourth of Canadian businesses and fewer than one tenth of German businesses place primary emphasis on benchmarking against competitors as a primary focus for strategic planning.

The development of process reengineering has been a very recent and rapid one (Gulden & Reck 1991:1). While total quality management is often considered to only involve continuous and incremental improvements to existing business processes, business reengineering involves "*radical redesign of business processes, organisational structures, management systems and values of an organisation to achieve breakthroughs in business performance*" (Gulden & Reck 1991:2). Gulden and Reck touch on what could be described as the most significant evolutionary step in the concept of quality management in the recent past. Gulden and Reck (1991:2) describe this evolutionary step as follows:

> *In the U.S., the search for continuous improvement has become pervasive. It has moved far beyond the institution of quality control measures to reduce product and process variability and remove defects. It has become a state of mind in the executive circles of many organisations, a concept for empowering the*

organisation to deliver what the customer wants. Yet in the last two years, another approach to process improvement - business reengineering - has been capturing the imaginations of a growing number of executives, even those with strong quality programmes, *In our estimation, the interest in reengineering reflects a growing realisation that the continual and continuous improvements of quality* programmes *are critical - but not enough, especially in the troubled economic times that call for periodic and massive improvements in a select number of key business processes.*

Gulden and Reck (1991:3) suggest that total quality management and business reengineering are entirely separate but synergistic business functions. This research suggests that this is a moot point and, in fact, demonstrates the hypothesis of this research investigation - that quality management is evolving beyond its historical boundaries into a new phase - a phase that ignores discrete and separate business practices as suggested by Gulden and Reck - but rather forms an integration of all strategic functions into an orchestrated strategic management system that integrates quality as a fundamental component in all its dimensions. The Ernst & Young study (1991:7) appears to support this view of quality management and process reengineering forming an integral part of a comprehensive strategic business improvement management system. Ernst & Young's (1991:7) definition of reengineering, or process improvement, is as follows:

Process improvement refers to the practice of continuously reengineering the processes by which a given product or service is created and distributed. Process improvement, at its heart, means always searching for ways to improve procedures ... One must continuously review, analyse, incorporate changing consumer expectations, and refine the process so that products and services continuously improve.

Clearly the Ernst & Young study does not differentiate on what is a quality management and what is reengineering on the basis of the magnitude of the improvement in performance.

The basic premise of reengineering is that many business practices in companies today are the result of years, even decades, of organic growth over time, being incrementally changed and improved, added to and reconfigured to meet the needs of the moment, and in response to changing business needs and sometimes the whims of management at the time. As a result of this, contends Hammer (1990:104) many United States companies are unprepared to operate in the 1990's. The usual method of boosting performance - process enhancement and automation - have not demonstrated the dramatic performance improvements companies require to compete in the 1990's. In particular, Hammer claims, *"heavy investment in information technology has delivered disappointing results"*. This is largely because companies use technology to automate old ways of doing business; *"It's time to stop paving cow paths"*, he claims.

It is suggested that competitive advantage cannot be achieved and maintained without a close interaction between the elements of a quality system, process reengineering, benchmarking, core process identification and analysis and performance measurement, all within a strategic framework aimed at achieving and maintaining competitive advantage.

Gulden and Reck (1992:3) describe the areas in which quality management and business reengineering are distinct in terms of purpose, objective , technique and result, and the business circumstances in which they are applied. Yet both methodologies are intimately linked. Six major areas of difference are described:

- The reason for application
- Goals for improvement

- Scope and focus
- Extent and pace of change in procedures, jobs and organisational structure
- Extent and nature of senior executive involvement
- Role of information technology

Each of the above aspects will be described below in more detail:

The reason for application: While the application of quality management is typically for ongoing, continuous efforts to improve quality of products and services, claim Gulden and Reck (1992:4) the justification for reengineering is one of urgency in which radically new ways of doing business are identified and assessed (It could be argued that the objective of a total quality effort is to achieve a quality organisation in all its dimensions and therefore the techniques used, whether reengineering, statistical process control or value engineering, are all key to a quality objective). Reengineering results in large-scale improvements to a business process - while a company with a comprehensive total quality programme pursues hundreds, even thousands of small, incremental improvements, often the reengineering of a single core business process is all a company can (or should) handle at any one time.

Goals for improvement: An organisation uses reengineering techniques when it requires massive improvements quickly. Gulden and Reck (1991:4) give examples of this scale improvement as cutting order-to-delivery times from a month to a day, reducing multi-year product development cycles by 50% - taking hundreds of millions of dollars out of providing field service. To achieve this, reengineering does not look at improving the status quo of a core process, it questions the basic rationale of why and how the process operates with a view to cutting through years *of "tweaking and adding-on"*. It looks to eliminate much of the work, alter the steps, redefine the jobs, and off-load tasks onto customers and suppliers. Reengineering constructs a high level view of the way a process works to expose the drivers of cost time and quality.

Possibly most significantly it uncovers the inhibiting and often unwritten "*rules*" of the organisation - the often unarticulated beliefs about how a process should work (or that the activity really needs to be done at all) which so often clouds efforts to improve.

Scope of the process: While quality management looks at micro level improvements in an organisation, claim Gulden and Reck (1992:7) reengineering looks at business processes that cut across departmental areas or even across organisational boundaries such as customers and suppliers where many of the largest gains in process improvement exist.

The central tenet of this research would contradict the limited scope given to total quality management described by Gulden and Reck. The basis of this disagreement is, for example, one of the most significant advances to manufacturing, namely Just-in-Time production (JIT) which emerged from the Toyota quality engineer Taiichi Ohno. JIT has been labelled "*the most important single innovation in manufacturing and quality improvement since (Henry Ford's) mass production*" and cannot be classified in any other manner than "*radical*" change in traditional thinking at the time it was established in the 1950's.

Extent of change: Gulden and Reck (1992:7) suggest that quality teams tend to accept a process and work within its basic structure to improve it. The authors identify four areas of necessary change in the process of reengineering:

- Fundamental redesign of the core process, typically capitalising on information technology
- Job skills and organisational structure
- Management systems
- Values and beliefs

The organisational changes resulting from reengineering go far beyond new work flows, claim the authors. A reengineered process typically results in new jobs, which require new skills and organisational structures to manage the work. Thus process design dictates jobs and organisational design. In turn, the jobs and organisational structure require new recruiting, incentive, training, resource allocation and other management systems. Finally these management systems influence the values and beliefs of the organisation.

The extent and nature of senior executive involvement: Gulden and Reck (1992:8) continue to compare total quality management programmes with reengineering by sketching a fairly typical TQM scenario in which initial significant top management attention changes to a bottom-up intensive programme - top management tend to become increasingly less involved. Reengineering requires a heavier participation by top management because it poses the potential of fundamental and radical change in the organisation. The possibility of major power shifts in the organisation, the elimination of entire functions and departments, and fundamental changes to organisational structure may result. From this perspective top management must not only provide the lead, but must be intimately involved on a continuous basis.

The role of information technology: Gulden and Reck conclude their comparison by claiming that information technology is incidental to quality improvement programmes, whereas in reengineering it is fundamental. Whereas in quality programmes information technology is most commonly focused on collecting and analysing data and measuring process performance, in reengineering, information technology is the enabler of entirely new cross-functional business processes. Computer and communications technology enables organisations to break old rules and mindsets that constrained the design of new business processes and business performance. The Ernst & Young and American Quality Foundation International

Quality Study Banking Industry Report (1992:28) contradicts Gulden and Reck's position in terms of their view that technology is incidental to quality management. The Ernst & Young report notes that, at least in the banking industry; *"there is an obvious correlation and interdependency between banking quality and banking technology. Technology improves quality by eliminating human error, but it also expands customer expectations. Thus, this connection can only strengthen in the future."*

It appears that the distinction between quality management systems and practices and reengineering may not be as clear as Gulden and Reck suggest, at least in the way many companies implement these practices.

Once a critical process has been reengineered, it then becomes the domain of ongoing quality efforts to enhance and refine the process until it again may require reengineering in the future (Gulden & Reck 1992:9).

Examples of reengineering being applied in the South African business community are limited. One example identified in the local literature is that of a consumer product manufacturer (Computing SA, August 1992) which has resulted in an expected 2% increase in profits and a 40% reduction is expected in the total manufacturing processes. The report indicates that the company took anything from six to 10 months for its manufacturing cycle, and this was felt to be non-competitive. In this case the one-month forecasting component of the cycle was reengineered to five days and ordering lead times was re-negotiated from 60 days to less than 30 days. In this analysis the quality control process itself was reengineered in part. Significant time was cut by running quality checks in parallel rather than sequentially.

The Ernst & Young and American Quality Foundation International Quality Study (1991:7) indicates that Japanese companies surveyed place significantly more

attention to process simplification and cycle time reduction than do their American, German and Canadian counterparts. There seems little doubt that this development "*beyond quality management*" is one of the most significant identified in this literature review.

4.2.4 Organisational flexibility

The concept of organisational flexibility is effectively introduced and compared to the traditional quality approach by Thornton and Erdman (1992:37) in a *Fortune* publication article as follows:

> *Here's the good news: American business's campaign to improve quality is paying off so well that in many areas the Japanese no longer enjoy a clear lead. Now the bad news: While the quality gap narrows, the world's best competitors are suiting up for an even more challenging contest. It's called flexibility, and its watchwords are change fast, keep costs low, and respond quickly to customers. In the race between the U.S. and the Japanese guess who's ahead? Most American companies are a generation behind - as far behind as they were on quality.*

The concept of flexibility deals with reading market trends more quickly, manufacturing many different products on the same assembly line, switching from one line to the other quickly and at low cost, being able to be as profitable on short manufacturing runs as on long runs and bringing new products to market more quickly than competitors. The concept of flexibility is closely aligned with reengineering since it deals with paradigm shifts in business thinking. Thornton and Erdman (1992:38) continue in their description of flexibility by saying that companies will have to redesign their information systems, processes for the development of new products, and other techniques to be responsive to customers in a quick, versatile and economical way. A focus on flexibility, say the authors, changes the way in which

managers view running a business. The authors quote a study that assessed people from 77 United States companies conducted by the Iaccoca Institute of Lehigh University. The study concluded that American business stands at the threshold of a new era in manufacturing which goes beyond mass and streamlined production and beckons flexible production, where factories are small and modular and machinery is re-programmemable to make an almost infinite variety of new or customised goods at low cost. The authors claim that whatever managers currently to be production break-even should be, the figure can be usually less than half through this flexible approach (Thornton & Erdman 1992:38).

The above authors indicate that a study conducted by Deloitte & Touche consultants demonstrates that the Japanese are clearly ahead in this migration from the basic quality paradigm of the past. While American companies rank rapid handling of customer orders, reliable delivery, rapid delivery, durable products, and strong supplier relationships as top areas of their competitive strategy, Japanese companies ranked enhanced product features, products with high R&D, low priced products, rapid change of production volumes, rapid change of product mix, introduction of many new products, and state of the art manufacturing processes as their primary competitive strategies.

While American companies are making progress in this area, Japanese companies are already advanced. One example cited by Thornton and Erdman (1992:38) is that of Japan's largest soap and cosmetic company, Kao Corp. The authors cite that no other company can match the flexibility of Kao's distribution through a highly effective information system that allows the company and its wholly owned wholesalers to deliver goods within 24 hours to any of 280 000 shops, whose average order is just seven items.

In terms of whether America can catch up with the Japanese, the Deloitte & Touche study suggests an unavoidable progression

> *... from product quality (doing it right) through reliability (always doing it right) and only then to flexibility - adding variety and speed. Many U.S. companies can't make this step. We (the U.S.) spent the Eighties on the basics - inventory management, quality control, reducing bureaucracy, - stuff the Japanese did in the Sixties and Seventies ... .. To exploit this fleeting moment American companies must acknowledge that quality is just a start.*

Bolwijn and Kumpe (1990:53) claim that at this early stage in the 1990's the industrial world is in a transition from a stage from mastering quality to achieving flexibility, however there are many companies that are still attempting to master quality. This will present certain problems for companies that attempt to migrate to flexibility before being able to demonstrate excellent quality. They claim it is possible to achieve flexibility without quality being completely absorbed by the company. However capitalising on flexibility as a competitive weapon will be virtually impossible if the company is not good enough of a quality firm. Developing the capacity to rapidly change product lines to develop flexibility will result in diverse products and services of inferior quality - in the 1990's good quality will become an expected basic essential by the market - quality will not provide competitive advantage and therefore it must be mastered first before the shift is made to a flexible organisation. Essentially, building strategic advantage based on flexibility, essentially becoming a flexible firm, requires quality to be designed into all aspects of the business - implying and supporting the evolving scope of quality proposed by this study. Without this initial focus on quality, business processes will be incapable of flexibility. Compensating for poor quality later is difficult and expensive (Bolwijn & Kumpe 1990:55).

Roever (1992:97) notes that overly complex forms of organisations are responsible for many corporate problems in the area of flexibility. Reducing over-complexity related to over extensive product ranges, complex vertical integrations, and over centralisation of business functions, improves responsiveness and flexibility, reduces cost and improves profitability.

Bolwijn and Kumpe (1990:44) describe a necessary and inevitable migration of companies through stages of being an efficient organisation to a quality organisation, to a flexible firm and finally to being an innovative firm. Each migration phase appears to be an extension on the previous stage; the organisational characteristics necessary for being an efficient company appear to allow a company to eventually move into the quality stage. Similarly, once a company has become competent at producing quality goods and services consistently, these same firms appear to have developed the capacity to become flexible (Bolwijn & Kumpe 1990:45).

Bolwijn and Kumpe (1990:45) describe flexibility as the ability to produce wide ranges of products rapidly. But a company cannot become truly flexible in practice until the products and services it produces are of high quality. Low quality products and services typically are associated with inefficiency, waste, errors in production, production run stoppages and high repair levels. This low quality approach is also much more time consuming and costly thus eliminating the possibility of being flexible. The authors claim that most of the best multinational performers will have mastered quality and flexibility by the 1990's. At this stage competitive parity will have been achieved in these areas and it will require a move to the next business paradigm to achieve competitive advantage. Bolwijn and Kumpe (1990:46) label this next migration level and competitive capability "*uniqueness and innovation*". While flexibility means the ability to change rapidly (but within the same paradigm) uniqueness is the ability to "*renew more quickly*" or shift paradigms, than competitors and therefore do more than simply change. They describe that it is possible to be more

flexible without being highly innovative, but a company cannot be innovative without already being flexible - flexibility is a prerequisite to move to the uniqueness/innovative paradigm. Indeed, it is the same for the movement between all major business stages - competence must be achieved at the lower level before moving to the next.

Bolwijn and Kumpe (1990:51) do not specifically discuss the concept of business reengineering, but it becomes apparent that reengineering techniques are necessary for companies to move from one business paradigm to the next. These authors describe their research findings in terms of companies migrating from a quality company to a flexible company. Although the authors do not compare the United States versus the Japanese as the earlier report did, the link is unmistakable. The authors dispute the notion of a global customer in which markets are viewed as consisting of many sub-segments. They consider it to be impossible for companies in the future to stick to a narrow product line and limited markets. The pressure to cater to increasingly fragmented markets and customer needs will become too great. More and more analyses, they claim, shows that lack of flexibility of the primary process of a company is the main problem in achieving this diversity of matching products to markets. The solution is to be found in promoting flexibility by minimising assembly line resetting times, setting up continuous flow productions lines with synchronized cycle times, introducing greatly improved product designs incorporating far fewer components, and parallel development. The results of this redesign will be impressive claim the authors. The experience of the authors suggests that within manufacturing throughput times can be radically reduced, with proportional decreases in inventories and space requirements. The authors begin to link to the concept of reengineering and corporate renewal by noting that while further improvements in flexibility can be made by applying more and more methods and techniques as described above, further gains will ultimately demand a completely different way of looking at the organisation - a paradigm shift in business thinking (Bolwijn & Kumpe 1990:51).

In the flexible firm, primary efforts are no longer on improving quality since parity between competitors has been achieved and customer no longer place value on additional quality. Efforts are now directed at increasing speed: minimise the time needed from product/service design to the marketplace - on wide varieties of products and services targeted at diverse market niches. Intense competition requires the flexible firm to constantly asses external developments in such areas as technology, competitive activity, and changing market trends (Bolwijn & Kumpe 1990:51). Bolwijn and Kumpe (1990:51) describe the organisational design of the flexible company being based on fast, enabling business processes which quickly react to changes, while retaining their reliability and quality, and which are characterised by fast feedback loops which measure performance. The functional organisation of the traditional efficiency oriented, quality organisation is being replaced by and product oriented organisations, consisting of relatively autonomous product-market combinations, business units, in which all primary and directly supporting functions are present. Communications lines are therefore short, the number of hierarchical levels is limited and central staff groups are kept to minimum.

Before continuing with Bolwijn and Kumpe's description of attributes of a flexible company, it should be noted that the above description by Bolwijn and Kumpe does not necessarily describe the organisation of the future in structural terms. The above thinking is not unlike the traditional business unit definition provided in traditional strategic planning texts of the 1980's such as Robinson (1986:35). Bolwijn and Kumpe (1990:51) continue with the attributes of the flexible firm as follows:

- Short manufacturing throughput times are achieved (small batches).
- Mixed model production lines are used.
- Most manual work is carried out in groups, employing multi-skilled employees.

- The inflexible mechanisations of the past have given way to flexible, often computer aided automation.

While clearly technology plays a critical role in the migration to a *"beyond quality"* flexible organisation, technological change is just one aspect of the challenge. Andersen Consulting claim that the real challenge is not simply to introduce technology to solve a single business problem, no matter how significant the problem may be in itself. Bolwijn and Kumpe comment (1990:6) that *"businesses do not need just another quick fix, another slight edge with a brief time window. What they need is the only sustainable advantage: the ability to be flexible enough to transform the business quickly, in response to strategic change and market challenge."*

Andersen Consulting's key message is that competitive advantage through technology alone does not lead to competitive advantage and flexibility. Technology must fundamentally change how a business is run to achieve this. Companies must rethink their processes first, indeed their very business itself. This total perspective on business change is labelled by Andersen Consulting as *"business integration or business synchronisation"*. Business integration is the goal of successful business in the 1990's they say (Bolwijn & Kumpe 1990:7). Alignment between all elements of a business are critical to this end, namely strategy, people, operations and technology. Companies that define their problems only in terms of one of the business components will set up barriers to integration and will struggle to effectively renew themselves.

4.2.5 Management of change

It is proposed that the evolution of quality management is playing a central role in this change in business practice. Indeed, the role of total quality management being applied in business as a methodology for change is noted by Kotler (1992:41) who believes that quality management and continuous improvement are effective processes

for organisational change. Among the models he gives for managing the Malcolm Baldrige National Quality Award system, the fourteen points of W Edward Deming, and the quality prescriptions of J.M. Juran.

Kotler (1992:42) continues to list strategies and approaches for successful change within an organisation which include organisational structures, human resources, business strategy approaches, a focus on corporate vision, values and culture and the role of technology. Bloom (1991:9) in a chapter entitled "*Total Quality Management - a strategy for change*", contends that the process of total quality management is a vehicle for managing change; for creating the roadmap for competitive advantage for many South African companies who will have to compete in world markets where companies have been focusing on quality for years as a competitive edge.

4.2.6 The innovative organisation

Innovation is a key area of evolution in the scope of quality. While quality has focused to a large degree on continuous improvement, rather than quantum leaps in innovation, Bowles and Hammond (1991:145) name innovation as a key area of focus in the quality framework. However, it is not innovation per se that the United States must focus on say the authors, rather getting innovations to the marketplace. Many of America's problems, say the authors, stem from not rapidly moving new innovations into the marketplace - not the lack of innovation. When the United States largely dominated the world's economy after the second World War, rapid translation of new ideas into practical products and processes was not a crucial factor in business success. However, international competition has radically changed that situation. For example, say the authors, for technology based industries, a failure to focus on the rapid delivery of new innovations to the marketplace can be fatal. Bolwijn and Kumpe (1990:51) indicate that many of the best American companies - Motorola, Millikin, IBM, General Electric - have made cycle time reduction a critical part of their quality

improvement efforts. This is a sound indication of the evolving scope of quality put forward in this research, suggesting that organisational change does not require another "*flavour of the month*", whether it is labelled reengineering, flexibility or innovation to allow it to move ahead in the 1990's and beyond, rather it requires an evolving capability to renew itself including all skills, based on the early foundations of the quality movement, but capable of dealing with all change facing the company now and in the future.

Bolwijn and Kumpe (1990:51) describe innovative organisations as being two developmental shifts away from the quality paradigm. They describe the innovative company as having mastered the phases of quality and flexibility, and has the following characteristics:

- Cost reduction, quality improvement, innovation and flexibility are all included in a continuous search for breakthroughs in all functional areas of the business, with the ultimate goal of delivering outstanding products in terms of price, quality and performance. The company of the 1990's will produce not only a wide and varied product range, but will also design uniqueness into its products.

- The innovative firm of the future will be characterised by its ability to co-ordinate all technology applicable in different business units to confound competitors by changing the competitive game. This ability to change business paradigms will be a critical part of the companies success.

- Significant use will be made of multi-disciplinary hoc teams, generally manned by experts from all over the company. Lines of command to the various teams will change based on strategic focus and will never be static - it will depend on the need at the time. This implies that organisational structures of today's companies are much too rigid and inflexible for the innovative organisation of the future. The

concept of "*integrating managers*" will exist to direct and coordinate the various activities of teams both horizontally - from research through development and engineering to production - as well as vertically along the product axis from components to end-products to delivery to customers. The traditional line-staff distinction has lost most of its significance, say the authors, as teamwork replaces rigid structures to provide increasing levels of flexibility.

- The company of the future will believes that, as the technological abilities of companies reach parity, the innovative capacity of the firm will become the key success factor. An innovative culture must be created and maintained by such measures as the employment of mavericks, the use of an open door policy, including the possibility of hierarchical bypasses around any remaining bureaucracy and the development of diagonal communication, supplementing the horizontal and vertical communication of the flexible firm. The innovative company is a learning organisation, say the authors.

- The competence of people will determine their contribution and status in the company rather than positional power common in most companies today. As increasing value is placed on know-how, dual career lines will emerge - one in management as well as a scientific one - which to a large extent eliminates the tension between hierarchy and expertise. Status symbols will be eliminated to a great extent. The innovative firm will succeed in using the knowledge and expertise of all its employees. This makes participation and human resource management more than the rhetoric it is in so many firms today.

- Creating innovative strategic alternatives rapidly will become a necessary ingredient for an innovative organisation in the future. Innovation will be encouraged through an informal and open culture in the organisation. Strong cohesion between all members of the organisation and a focus on superordinate

goals and the mission of the company will create the focus of effort and resources required for a leading organisation. Often, say the authors, successful innovations can be applied in various parts of the organisation but are not due to poor synergy and communication, with resultant loss of time and energy (Bolwijn & Kumpe 1990:53).

4.2.7 The application of technology

The Ernst & Young/American Quality Foundation study (1991:5) indicates that Japanese companies currently use technology twice as often as United States companies in meeting customer expectations, while all companies plan to substantially increase their technology usage for customer satisfaction over the next three years. The Banking Industry Report of this same research series (1992:28) suggests that *"the anticipated increase in technology to meet customers expectations ... shows how customer driven banks are becoming."* It is strongly indicated by this study (1992:29) that technology is increasingly becoming fundamental to the improvement of quality and the satisfaction of customer needs. The study shows that other banks surveyed indicate that the future use of technology will play a primary role in reducing cost (38% of banks surveyed) improving quality (40% of banks surveyed) improve service (42% of banks surveyed) and meeting customer expectations (66% of banks surveyed).

Jack Welch, CEO of General Electric in the USA, claims that while technology is still absolutely critical for competitive advantage in the 1990's, it will become increasingly value driven. He claims that buyers in many industries are moving away from the high priced, sophisticated technology for its own sake and are looking for technology that gets the job done at the lowest cost. If technology cannot be cost justified, it will not sell, no matter how "*hot*" it may be (*Fortune*, January 25 1993:69).

4.2.8 Customer value

Hanan (1991:113) describes a definite area of future development in the field of quality as it relates to the traditional dimension of customer satisfaction. He claims that the next generation of business competitors will have to count on being "*qualitative equals*". Product parity will gradually be achieved with product quality achieving near perfect standards. In many cases, Hanan claims, product quality will exceed customer requirements for "*good enoughness*", which represents the optimal level of value that a customer needs. In other words customer satisfaction will no longer be a potential competitive advantage for companies - companies will have to move beyond customer satisfaction.

Hanan feels that without an optimal level of quality, a company simply will not be able to compete - indeed this fact was established in the United States during the 1980s, he says. On the other hand, companies can misinterpret this evolutionary step in customer satisfaction. Motorola's obsession with quality (Hanan 1991:115) which it defines as technological excellence at the six sigma level or a 99.9997% quality level (defect rate of 3.4 per million), is claimed to have gone so far beyond what is considered optimal by customers that it is blamed for squandering the company's lead in marketing. Hanan asserts that this obsession has delayed product development times in order to achieve near perfection, with the result that many key customers have moved to Motorola's competitors.

It could be argued against Hanan's example that, instead of taking quality too far, Motorola missed the most basic principle of quality as defined by many quality authorities, namely that quality is defined by the customer. It appears in Hanan's example that Motorola defined their Six Sigma quality principles without adequately considering that their customers also require rapid development times to market, in order that they themselves may achieve competitive advantage.

Hanan (1991:117) defines this next stage of competitive advantage beyond quality as the *"quantity of applied customer value"*. Customer satisfaction, to represent value, must take place in customer operations, not that of the supplying company. Customer value, say the authors, reflects a customer's competitive advantage not an advantage that the supplying company may claim *"because you have raised one more integer on the right of the decimal point in measuring your quality"* say the authors programme, Motorola's Six Sigma goal). Satisfaction must measure added value to the customer. For example, how much more competitive is the customer, or how much less of a high cost producer, or how much more of a high margin suppliers the customer, as a result of doing business with the supplier, is the yardstick of customer value.

Vantrappen (1992:53) also observes this evolution to value or the customer. He considers customer value as the emerging strategic imperative for the 1990s. While a firm's shareholders are *"its right of existence, its customers give - or refuse - right of passage"* and only by creating value for the customer will the firm create value for its shareholders.

Hanan (1991:11) makes the point that the best demonstration that an organisation is worthy of winning the coveted Malcolm Baldrige National Quality Award in America is for the organisation to first demonstrate that they have contributed to one of their customers in achieving the same award. As opposed to satisfying customers, this would be providing measurable value.

Robinson (1986:323) describes value in a more measurable manner as that price a given amount of quality is delivered to the market. Robinson says that *"a business offers value when the quality of its products exceeds that expected at a given price, or when the price is below that expected for a given level of quality"*.

Robinson describes data from PIMS relative to product/service value as the interrelationship between value and product life cycle. Businesses operating during the maturity and declining stages of the product life cycle benefit from high value. Conversely, low product value hurts profitability in low growth markets. Robinson describes the implications of poor quality when companies attempt to skim the market with a low value strategy which may work in the early stages of the market, but the strategic position typically becomes increasingly difficult as the market matures and then moves into decline. The benefits of offering high value in the later stages of the product life cycle is not limited to profits alone, days Robinson, while it is hard to gain share in a mature market, businesses that offer high value in mature markets show market share gains that are about three times higher than those of businesses offering low value.

Value is critical for late entrants into a market, according to Robinson (1986:326). To enter a market late with poor quality and low pricing, in other words providing low value to the customer, is almost certain failure. Late entrants into a mature market face a difficult task anyway but those offering high customer value can achieve results comparable with that of the earlier entrants. One of the greatest difficulties late entrants face is to overcome the strong images of earlier entrants, and it appears, says Robinson, that the solution is either price or quality differentiation, or both. An valuable South African case study on this issue is the recent controversial introduction of the Korean Hyundai motor vehicle into the mature South African motor vehicle market, particularly the medium size saloon segment (*Financial Mail* 1994:18). Implications are that Hyundai have adopted a high relative value strategy, hoping to lure customers from the traditional marquees.

Drucker (1985:228) has commented that *"quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for"* which is clearly a definition of customer value. Drucker makes clear that technical quality

(what is put in) is not enough to achieve competitive superiority. Bowles and Hammond (1991:65) comment that it is quite possible to build a technically perfect product that nobody will buy. The movement from conformance or technical oriented quality to customer defined quality standards was pioneered largely by service oriented companies like Metropolitan life and American Express say Bowles and Hammond (1991:66). These companies discovered that the manufacturing oriented quality approach was easily transferable to service industries. Since about 75% of America's gross national product is generated from service industries, enhancing quality performance in these areas is clearly important.

American Express has been one of America's leading service quality pioneers (Bowles & Hammond 1991:71). With the significant success of their business in the 1970's, they realised that they would have to be careful not to let service quality slip along with expansion. In 1978 Amex launched a quality assurance programme. After three years of this QA programme their financial performance showed the results. Service delivery had improved 78 percent, expenses per transaction were reduced 21 percent, and card member processing time was reduced 21 percent. This essentially added "*hundreds of millions of dollars to the bottom line*".

4.2.9 Accounting practice and costing

It may appear initially somewhat surprising to include the long-standing and traditionally staid profile of accounting in the category of evolving dimensions of beyond quality management. But the relatively recent Activity Based Costing (ABC) accounting approach appears to be making a significant impact on business performance.

Dilton-Hill and Glad (1992:164) note that a number of companies have embarked on total quality programmes in South Africa and others have implemented activity based costing, but few companies have combined the two processes.

Total quality attempts to improve profitability, by in part, eliminating waste and defects, but is limited by traditional accounting reporting which do not measure or report the gains in quality except as highly aggregated bottom-line profit. The real potential of activity based costing lies in managing the activities that are identified. The justification for implementing a quality programme requires a visible measure of improved performance - the monetary value lost because of a lack of quality. Juran (1989:50) describes the cost of poor quality as *"the sum of all costs that would disappear if there were no quality problems"*. Peters (1987:74) states that poor quality in manufacturing firms accounts for 25% of people and assets for corrective action. This figure can be as high as 40% in service organisations.

Dilton-Hill and Glad (1992:166) quote a study carried out on behalf of the Institute of Management Accountants in the USA, Bank One, Cascade Engineering, Hewlett Packard, and Xerox were investigated as they had a reputation for successfully measuring, reporting and analysing the cost of quality. Cost of quality information was used by these companies to focus their continuous improvement programmes. However, it was noted that although all companies reported on the cost of quality regularly a formal link to the companies financial reporting system was not critical for the success of a cost of quality reporting system. This contradicts Roth and Morse (1988:54) who advise that the quality cost system should be integrated into the accounting system as much as possible to provide maximum benefits. The issue revolves around the old maxim "*what gets reported gets attention*".

ABC argues that activities consume resources and products or services consume activities. ABC seeks to determine the cost of performing the activity. ABC seeks to

explain the reality of cost behaviour and to highlight costs which are excessive or add no value.

It is this weakness in the attention given by companies to linking quality performance to profitability that is an area of criticism of the Malcolm Baldrige Award. Bowles and Hammond (1991:144) comment that it is possible for a *"money-losing company to win the Award"* under the existing criteria. The authors claim that virtually all quality improvement programmes can document, to some degree, cost savings and cost reductions, but they all have difficulty showing a connection between quality and profitability. Bowles and Hammond (1991:145) were unable to find a single company that has fully integrated its financial performance activities with its quality improvement programmes. The authors believe that the relationship of quality improvement to financial performance has not been adequately documented in the United States.

4.2.10 Organisational structure

Organisational structure is a vast subject beyond the scope of this review to explore in detail. This section will touch on some of the issues linking improved quality to changes in organisational structure.

The need for organisational flexibility in response to a rapidly changing business environment has been previously noted in this report. It was commented that the organisations of today, with their bureaucratic, functional structures, essentially a relic from the nineteenth century, are unable to respond rapidly enough to the demands of the modern business environment. In the more stable environment of the past, traditional TQM was a powerful improvement and competitive strategy. But, as has been noted, the rules of the game have changed. The concept of the "*adaptive organisation*" (Dumaine 1991:28) along with other similar terms, has been conceived.

The term "*adaptive*" implies a dynamic, constantly changing structure, which is held together by primarily two factors (clear vestiges of the quality movement): a focus on the customer, and work processes. However, as Dumaine explains, this focus will not be encumbered by the traditional, top heavy, slow moving functional structures of the past. Dumaine (1991:26) believes that in the future, instead of looking to the superiors for direction and supervision, tomorrow's employee will be trained to look closely at the work process and how to devise ways to improve on them, essentially continuous improvement of work processes will become a basic aspect of day to day work, even if this means temporarily leaving his or her regular job to join an adhoc team dealing with a mutual problem. Dumaine quotes Beckton Dickson, a New Jersey maker of high tech medical equipment: *"Forget structures invented by the guys at the top. You've got to let the task form the organisation"*. This suggests that hierarchy, status and seniority will become less important in the future organisation in terms of defining the organisational structure. Of greater importance will be the work processes (or "*tasks*" to use Dumaine's term) to form an organisational "*map*" rather than an organisational chart which essentially only provides reporting structures and little else.

The adaptive organisation incorporates an informal organisational network of personal relationships, alliances, networks and teams as its primary source of energy. This power is achieved by aligning what the corporation wants to achieve in broad terms through innovation and constant improvement, with *"what turns people on, namely a chance to use their heads and expand their skills*" says Dumaine. Traditional hierarchies usually have the opposite effect, Dumaine believes (1991:27). Dumaine quotes Paul Allaire, CEO of Xerox Corporation in America. Allaire believes that the traditional organisational structure destroys the energy required for innovation, flexibility and continuous improvement. Allaire believes that unleashing this kind of energy is the best hope for American competitiveness, even better that traditional TQM programmes, which is surprising coming from a CEO whose

company won the Malcolm Baldrige Quality Award in 1989. Allaire (1991:28) believes that the United States will never out-discipline the Japanese on quality. To win, he says, American business needs to find ways to capture the creative spirit of the American worker which seems to be the uniqueness required by business in the future. But, Dumaine implies, the current bureaucratic structure of the typical American business is a major hindrance to this innovative capacity.

As was noted in a previous section, one of the critics of the Baldrige Quality Award is Tom Peters. Peters (*Fortune*, July 1 1991:53) notes that the quality criteria in the Baldrige do not include organisational bureaucracy, which he believes is a major barrier to achieving superior quality. While organisational structure does not appear in the traditional quality literature, it does not take too great a leap outside the traditional scope of TQM to identify the logic. As has been noted, one of the most significant movements out of traditional TQM (but firmly based on its principles) is process reengineering. The previous commentary on this subject looked at the difficulties of functionally based organisations placing a focus on customers where outputs to customers are the result of cross-functional business processes. Improving the quality of these outputs (products and services) requires improvements to these cross-functional processes - a task which is greatly impeded by highly structured, functional divisions or departments. Galagan (1992:22) quotes management consultant Geary Rummler; *"In the last 10 years of looking at processes and how to manage them, I'm surprised at how secondary structure becomes, once you understand how to manage processes"*. Galagan continues (1992:23) with a comment which more clearly identifies the importance of the process orientation that process engineers predict that traditional business functions will tend to disappear as the basic organising units of business. What will emerge in their place will be core processes such as getting the product to the customer. Clearly, a key strength of the process structure is the focus on work being performed that add value directly to the customer.

Another critical issue also related to organisational structure is management style and employee empowerment. It has been noted that a command and control management style is generally not conducive to mobilising all employees to strive for quality improvements. Galagan quotes the author of "*Employee Involvement and Total Quality Management*", Ed Lawler who believes that hierarchies are just fine for some organisations if the business is relatively simple. If the business does complex work, faces a turbulent environment, has to react quickly, and must continuously improve its costs and quality, then high involvement management appears to be the best approach.

Clearly a hierarchical, bureaucratic structure does not promote involvement, which in turn does not promote responsiveness, flexibility, continuous improvement and innovation. However Lawler's point should be reiterated that this adaptive structure is not a solution which can be applied across the board - the industry, competitive conditions and profile of the organisation in question must be considered before a judgement can be made.

What organisational structures will look like in the future is a complete study in itself. Only brief comments will be made here:

The formal, rigid hierarchical structure will give way to a more fluid formation of personal networks based on the skills and capabilities of individuals rather than positional power. In an adaptive organisation, a skilled specialist who is a leader in one major project or area may be a junior follower on another - status and rank falls away and competence and skill takes its place (Galagan 1991:30). Not only will layers of management flatten, but the very concept of management will evolve to a greater emphasis on coaching and facilitating. It is quite feasible to view managers of the future not as better skilled, more senior and with greater status, but as people with skills and competencies related to coaching and facilitating -

other specialists on a project team may well be better remunerated simply by the marketplace scarcity of their skills. Tomasko (1993:98) describes companies such as Honda, General Motors (Saturn complex) Du Pont, Merck, Pepsico and Mars Inc. which have already established aspects of this *"hierarchy-less"* organisational form.

- The organisation *"turned on its side"* (Tomasko 1993:100) is characterised by *"pointedness"* or a focus on the competitive environment rather than on historical structures out of place with current business imperatives, permeability; capable of forming close relationships with its external environment, and *"flowing space"* in which communication is facilitated and rapidly moves to the point of need.

- Tomasko (1993:111) also describes the organisation of the future designed *"around customers and cross cutting processes, not functional fiefdoms"*. This focus on the customer appears again as a restructuring focus to ensure that when organisations grow in size, parts of the business tend to move further and further away from the customer - this approach encourages splitting off parts of the company so that they remain directly in contact with their own customers. IBM, Sun Oil, Cypress and Du Pont have used this approach (1993:112). Microsoft's CEO, Bill Gates believes that when a unit exceeds 200 people the ability to stay focused and flexible declines.

Clearly, from the brief overview presented above, organisations of the future will have to place significant attention to organisational structure to ensure competitive advantage based on quality, flexibility and innovation.

4.2.1 Teamwork

It may appear somewhat odd to include a review of teamwork under the broad heading of evolving dimensions of quality management since the use of teamwork is

probably as old as business itself in one form or another. However the literature does suggest a significant evolution in the theory and application of teamwork. It is also not simply random order which places a review of teamwork immediately after a review of organisational structure - indeed this review begins with a view by Tomasko (1993:99) that teamwork will increasingly become a fundamental building block of the adaptive organisational structure in the future.

It should again be noted that the subject of teamwork is a complex and vast subject within the field of industrial psychology which would and has justified complete research studies in itself, indeed entire texts and research journal articles are dedicated to this subject (Davenport 1993:102). Therefore this review will again be a brief overview of only salient evolutionary issues.

Tomasko labels "*composite teams*", along with reinforced jobs and "*load bearing managers*" as the "*basic building blocks*" of the future organisation. They provide a structure that is fast, flexible and customer focused, and provide the all-important foundation for the innovative businesses that are emerging to carry business into the next century of globally based competition.

Tomasko (1993:20) describes Harvard Business School's D. Quinn Mills team based organisational structure in which semi permanent clusters of professionals from different disciplines would work together and disband when the task is complete. Taking this concept further, this could accommodate team members not necessarily being full-time company employees - they could also be consultants, contract workers, specialists from suppliers or other alliances.

Tomasko (1993:166) notes that a project-oriented team structure carries the benefit of a results focus over traditional jobs which tend to "*be a laundry list of activities ... and goes on forever*", project or task teams tend to be time bound and focus on a

measurable result. Tomasko does acknowledge that this team orientation is not a panacea for all companies - where tasks are simple and comes in "*small chunks*", they can usually be performed better by individuals.

Tomasko (1993:166) lists the Japanese company, Kyocera as wanting to eliminate all jobs, and sorts all employees into groups of a few to several hundred. All such teams have a clear objective, allowing their contribution to Kyocera's profitability to be measured. Further to integrating this approach into the organisation, the company's accounting system is designed around this structure.

Business process reengineering or process innovation has been describes earlier in this study as a major evolutionary step beyond traditional quality management. Davenport (1993:96) lists teamwork as one of the basic "*organisational enablers*" for process innovation. Innovation can be powerfully enhanced by structuring around process teams. Davenport describes historical research which clearly demonstrates how teams can be significant performance enablers. He lists two basic types of teams as cross-functional teams and process design teams. Davenport notes (1993:100) that if a company wants to ingrain quality improvement into the fabric of the organisation, team structures are the way to achieve it.

Davenport (1993:102) notes that teams are not a panacea. Davenport quotes Hackman, who believes that teams have a "shady side", as they are typically designed and managed in today's organisations. They can, for example, waste the time and energy of members, they can enforce norms of low rather than high productivity, and they sometimes make bad decisions he believes. Behaviours of destructive conflict can arise in teams as opposed to employees working alone, both within and between groups. Groups are known to "*exploit, stress and frustrate members - sometimes all at the same time*" he concludes.

In summary, the concepts of teamwork and the application of teams to business performance improvement are evolving from the relatively simple use of quality circles in recent decades as a tool for employee involvement and continuous improvement, to one where teams form a cornerstone of organisational structure in order to achieve greater levels of quality, flexibility and innovation.

4.3 Conclusion

The preceding chapter has profiled discrete dimensions related to quality management which have been described as evolving dimensions of quality management. What has not emerged in this review is an integrated framework in which all of these elements operate synergistically within in an organisation. A profile of an integrated approach was not evident from the literature, which in a sense is the central theme of this research, and this is to assess the evolution of quality management and its impact on organisational performance. It is proposed that traditional quality management is indeed limited for the demands placed on organisations in the 1990's and beyond, as a number of writers have suggested. But what appears to be happening is that new improvement techniques and strategies are being developed and are being presented as discrete and independent "*flavours of the month*". While these approaches may indeed be powerful techniques in their own right, their fragmented application can nullify their impact on achieving meaningful results.

What this review does suggest is that there is nothing fundamentally flawed with total quality management. Indeed TQM has included most evolving dimensions included in this review in one form or another. For example, TQM applied broadly has included approaches for massive process improvements such Just-In-Time manufacturing or JIT. Whether consultants and experts call it reegineering is irrelevant. Further, TQM has long been identified as having a major impact on corporate profitability through the PIMS study. What is required is a closer link between finance and accounting

functions to ensure that these practices support business improvement and innovation. It is true that TQM does not appear to have included the design of organisational structure as a key element considered in its improvement focus. Attention to how structure supports or negates quality improvement efforts is urgently required. Continuing on, teamwork has long been a key focus and vehicle of TQM improvement efforts and are intimately linked into new organisational structures of future, more flexible organisations, which, in turn, suggests that TQM cannot ignore organisational structure in its improvement strategies. Following on with structure, overall business strategy is the architect of organisational structure, and as one quoted author has indicated, in the best performing companies there is no difference between business strategy formulation and quality strategy formulation, again implying the need for overall integration of these approaches. Flexibility in an organisation, as described in section 4.2.4, is an outcome of reengineering efforts and not a discrete improvement technique or methodology in itself. Achieving greater levels of speed and flexibility needs to become a key objective of quality and reengineering efforts. Finally, change management has been likened to TQM itself by certain writers - TQM is a change mechanism and therefore discrete management of change methodologies should not be seen in isolation. What is therefore required for future business improvement is not what certain experts seem to be punting, namely the next "*flavour of the month*", but an ongoing evolution of the basic improvement system which has been in place and has evolved over decades - whether it is called Total Quality Management or not - but rather an integrated strategy and methodology coordinated throughout the organisation.

CHAPTER 5

RESEARCH METHODOLOGY

CONTENTS

5.1 Introduction

A number of research methods could have been utilised for a research study of quality management in South Africa. Table 5.1 indicates the various choices available, amongst others, as described by Leedy (1989:90) which needed to be analysed before an appropriate approach could be applied. However, the primary objective of the research, namely to determine the scope of quality management practice in South African companies and to assess whether a correlation exists between the application of TQM and overall company performance, required a combination of Correlation

Research, Descriptive Survey, and Analytical Survey, since the study correlated quality management with profitability, observed companies at a point in time and introduced no influence into the business environment (e.g. it may have been possible to request each company to introduce certain quality practices over a period of time) and much of the data is quantitative. The following was also required:

- That a broad cross section of companies be identified which were accessible.
- That this population of companies be assessed in terms of their current and past (5 years) situation as it relates to the day to day practice of quality management.
- That objective, standardised and valid measures of corporate performance be available for all companies in the sample.
- That a broad range of information be gleaned from these organisations to determine the scope of operation in quality management and related performance improvement management practice.

These requirements implied that a descriptive research methodology utilising a sample survey be applied in order to assess companies in the South African status quo. It was considered important to understand the status quo in South African quality management before further experimental research can be performed. The research design was basically modeled on the four nation Ernst & Young IQS research approach (Ernst & Young, 1992).

This descriptive research approach observed and systematically measured variables related to quality management as they currently occur in a sample of South African firms. The research tool was an extensive survey questionnaire. The following research strategy matrix depicts the broad research options:

TABLE 5.1
RESEARCH STRATEGY MATRIX

RESEARCH METHODOLOGY	DESCRIPTION OF METHOD
Case & Field Study	Descriptive type research. Data is gathered directly from individuals and/or groups/entities in their natural settings
Correlation Research	Statistical investigation between one or more other factors. Looks at the surface relationships but does not necessarily probe for causal reasons.
Descriptive Survey (Normative) Research	Observes certain phenomenon of the moment and describe what is seen (Largely qualitative data).
Developmental (Longitudinal) Research	Descriptive type study over long periods of time
Analytical Survey	Different from descriptive in that data is represented in numerical form (Largely quantitative data).
Experimental & Quasi-Experimental	An extraneous influence is introduced and account is made of any identified change in state and the underlying dynamics which caused it.

5.2 Sampling approach: Unit of analysis

The universe for this study is considered to be all listed South African companies on the Johannesburg Stock Exchange. This list, as published and rated for performance by the Sunday Times Business Times in their annual Business Times 100 survey, was used as the population to be targeted.

The Business Times 100 list as compiled by Sanlam in November 1991 was obtained from Sanlam in Cape Town and the names of the top executive in each company and company addresses were obtained from McGregor's Who Owns Whom (1993). Given time and resource limitations this operation was completed in August 1993 before the

first mailing of the questionnaire took place in September 1993. All company addresses and names of executives were checked telephonically before the first mailing took place. Despite this lengthy exercise a small number of respondents indicated that names and addresses were still incorrect.

5.3 Scope of the research

The scope of the research included those quality and performance improvement practices considered most critical to the successful management of quality and performance enhancement in a diverse organisation. These practices were primarily sourced from the Malcolm Baldrige framework described in the review of the literature (see section 2.2). Further to this, key areas of quality management identified in the review of the literature were included.

The study also includes an analysis of those business functions included in the quality framework. A significant aspect of the research focused on general business issues (such as organisational structure) which have been mooted to affect the success of a given quality strategy. A detailed perspective of the scope of the study can be obtained by reviewing the questionnaire itself in Appendix 1.

It needs to be reiterated that the objective of this study was to assess the evolving scope of quality management in South African companies and its impact on organisational profitability, and as such this study included **business practices not normally considered to be part of traditional quality management**. This point is emphasised because one top executive of a leading company declined to participate in the study because he felt that that it was a study of strategic or general management rather than quality management (as defined by ISO 9000). This decision by the executive was made despite a lengthy face-to-face discussion between this researcher and the executive at the executive's request. Valuable insights and perceptions were

nevertheless gained and have been reported in the interpretation of the data section of this study.

It was also felt important to create some form of benchmark for the research results so that comparisons between South African companies could be compared to international practices. In this regard the Ernst & Young Consulting Group's international research study into quality management together with the American Quality Foundation is an important benchmark. The introduction to the top-line research report (1991:3) in the report series indicates the purpose and need for this "*benchmark*":

> *Until now ... there has been no global benchmark for quality progress, no inventory or assessment of emerging quality practices, no way to link practices and results, nor any basis for establishing which practices work best within and across industries, countries and cultures.*
>
> *The International Quality Study (IQS) is intended to fill this void. As the definitive study of the best international quality management practices, the IQS represents a new multidimensional body of knowledge responsive to the changing dynamics of business worldwide* (1991:3).

5.4 Statement of the problem

The implication emerging from the literature review is that more successful companies, or companies who are attempting to position themselves for a sound competitive position in the latter 1990's are expanding their view and practical application of quality management. The theoretical implications are that these companies are integrating quality concepts, principles and practices into a greater number of business functions as well as redefining the parameters of a comprehensive

total quality management strategy, thereby increasing their overall business performance.

The specific statement of the primary problem question is as follows:

To what degree are leading South African companies evolving their scope of quality management practice to include a broader range of performance improvement methodologies and techniques, and by including the full spectrum of their company's business functions within a comprehensive quality management system, thus positively impacting their competitive position and business performance?

This problem statement can be subdivided into two broad areas, namely:

- **The scope of the quality system**: This is the degree to which companies include a comprehensive range of performance improvement methodologies and techniques within their definition of quality management.

- **The integration and implementation of the quality system**: The degree to which this quality system is implemented in diverse business units or functional units throughout the company and the degree to which the companies demonstrate entrenched quality concepts, principles and goals.

Secondary problem statements are as follows:

- What are the views of top management versus lower levels of management on key issues of quality management?

- Is there any relationship between formal versus informal quality systems and overall organisational performance?

- Is there a trend in the duration that the quality system has been in place and overall success of the quality system?

- Attempts will be made to identify cases in which economic conditions are heavily affecting certain industries rather than other performance factors related to quality?

- To what degree are various dimensions of top management leadership behaviour correlated to successful performance indicators?

- To what degree is the use of detailed quality performance measurement information a key factor linked to corporate profitability?

- To what degree is quality supported through training, recruitment practices, performance appraisals, and recognition/remuneration practices? Issues such as management style, work structures and practices, employee participation, and communication will be assessed and correlated with business performance.

- To what extent is the use of technology linked to corporate success in quality management and profitability?

5.5 Hypothesis

The primary hypothesis is stated as follows:

The financial performance of South African companies is closely correlated with the evolving scope of quality management practiced in these organisations.

The corresponding secondary implied hypothesis is as follows:

Quality principles and practices are included in the expanding scope of quality management in more successful companies than less successful companies in South Africa. The following business functions in more successful companies more commonly include quality management principles and practices:

- Strategic planning
- Marketing management
- Financial management
- Accounting
- Employee communications
- Research and development
- Human resources management
- Operations management
- Information systems management
- Training and development
- Manufacturing
- Customer service and support
- Supplier management
- Legal functions
- Public relations
- Social responsibility
- Union relations

5.6 Selection of primary variables

5.6.1 Corporate performance

A number of performance variables could have been selected for the purpose of this study. The variables, however, had to be accepted measures of corporate performance in the business community, had to be reasonably easily available, and had to be accurate and objective measures of performance which are comparable across companies and industries. Since performance data published by companies often involve different methods of calculation, the data source had to be standardised. Only two standardised sources were identified, namely McGregor's Who Owns Whom and the Business Times 100 performance criterion. The specific performance ratios used from McGregor's are:

- Operating Profit Margin (OPM)
- Net Profit Margin (NPM)
- Return on Equity (ROE)
- Return on Assets (ROA)

These ratios were selected because they were more commonly available in McGregor's for the respondents in this research. Five performance scores were selected (as opposed to a single score) because not all ratios were available for all companies from any source and it was also considered more probable to find a correlation between quality and profitability if more than one ratio was used. Descriptions of the McGregor's Who Owns Whom ratios are provided directly from the McGregor's text in Appendix 3. A description of the Business Times 100 performance factor is provided below as a direct quote from the Business Times.

The financial performance criterion which seemed most appropriate for this research, given the fact that it is used by the PIMS study which correlates quality performance with profitability, is Return on Investment or ROI. Unfortunately ROI was unavailable from Who Owns Whom and was not provided in great enough numbers by respondents to be a useable measure. A description of ROI as it is used in the PIMS study is provided below.

The Business Times 100

The following description is an abridged version of the description of the Business Times 100 performance as described in the Sunday Times, Business Times (28 November 1993:2).

> *The Business Times Top 100 companies are ranked by the measure that matters most - how they have performed for their shareholders.*
>
> *The companies' performances - all are listed on the Johannesburg Stock Exchange - are measured over five years to the end of September 1993.*
>
> *The results were reached by taking ordinary shares to the value of R100 on October 1 1988, re-investing dividends in shares on the payment date, taking the number of accumulated ordinary shares at the end of September this year and multiplying them by the ruling share price.*
>
> *This amount was compared with the original R100 and the average annual return based on the difference. Because some shares trade thinly and infrequently and may thus not represent a true market price, we exclude any company whose share trade has been less than R1-million in any one of the five years.*

We also knock out non-operating pyramids and holding companies (except where the holding company did better than the operating company) investment and property trusts, exploration and foreign companies. Cash shells and companies that have changed their nature radically in the five years have also been excluded.

Where companies have issued special dividends in the five years, these have been taken into account. In some instances they, as in the case of Investec and Putco, have had a dramatic effect on the companies position in the Top 100. Share splits and consolidations have also been considered. So too were offers of cash or bonus shares. I-Net took the cash as the dividend value and re-invested it in shares.

In all the calculations, the company's annual report is the basis for calculation, except where subsequent preliminary results have been declared.

The Business Times rankings unquestionably identify the top performers. The method of selection is dynamic and gives due credit to those listed companies which have consistently improved their shareholders' lots. It permits realistic performance comparisons between different types of companies and sectors.

We believe ours is the best measure of performance because it focuses on what business is all about - maximising wealth for shareholders.

Operating Profitability Margin (OPM)

Shapiro (1990:749) describes OPM as reflecting the firm's operating expenses as well as its cost of goods sold. The rationale behind this measure is to capture how profitably a firm is running its operations, as opposed to how well the profits are

apportioned among stakeholders, including tax. It is felt that this would reflect more accurately the impact of quality management efforts given the operational focus.

Net Profit Margin (NPM)

Shapiro (1990:750) describes Net Profit Margin as a ratio of after tax profits to sales. The ratio reflects management's ability to generate enough revenue to cover the firm's manufacturing, operating and borrowing costs, while also giving owners a reasonable return on their investment.

Shapiro comments further (1990:751) that NPM says as much about a company's financial structure and tax situation as it does about the competence of its management. The OPM more directly provides insight into how well the business is doing, for example "*are customers coming to the stores and are they willing to pay a premium for the company's products*'. For this reason it is thought that OPM would be the most appropriate measure of the impact of sound quality management, with NPM the second most suitable.

Return on Equity (ROE)

Shapiro (1990:754) notes that while ROE expresses the rate of return on shareholder's equity, it should only be used in conjunction with other ratios before decisions are made as to the performance of a company. A high ROE, normally associated with effective management, could indicate an over-leveraged firm, whereas a low ROE, usually considered a sign of ineffective management, could indicate a conservatively financed firm.

Return on Assets (ROA)

Due to differing descriptions and definitions for ROA the formula provided by McGregor's Who Owns Whom, shown in Appendix 3, was used.

The calculation for ROE is also shown in Appendix 3.

Return on Investment (ROI)

The corporate performance variable most commonly used by the PIMS programme is ROI (Robinson 1986:299). Unfortunately it was not possible to obtain this ratio from an objective and standardised source. Robinson provides the following rationale and comments:

ROI is calculated as: $ROI = \frac{\text{Pre-tax income}}{\text{Average investment}}$

where:

- income is business income after the deduction of corporate expenses but prior to interest charges,

  and
- investment includes working capital at book value to smooth out cyclical fluctuations and other observations, four year averages are used.

Robinson (1986:300) explains that criticism has been levelled at the suitability of ROI as a strategic criterion for business performance. These criticisms relate to the use of ROI, which is a short-term measure of performance, for strategic analysis. ROI can be manipulated by the cutting of discretionary expenditure and through short-term

reductions of the investment base. In the PIMS study, these concerns are partially answered by the four year average of ROI, and the fact that PIMS is an ongoing study, therefore reducing the possibility of ongoing manipulation.

5.6.2 The measurement of quality management

The assessment of performance on quality management as a business process was primarily structured on the Malcolm Baldrige criteria, the ISO 9000 criteria, the Ernst and Young IQS research study as well as a number of other key areas identified in the literature review. These were used to create a quantifiable framework against which to conduct statistical analysis. The descriptions of factor analysis used in this study to identify these dimensions more accurately are provided in Chapter 6.

5.7 Development of the questionnaire

The questionnaire was developed after a comprehensive review of the literature in which key concepts and issues were extracted to form the broad framework of the questionnaire. This framework was then compared to existing quality models, in particular the ISO 9000 and the Malcolm Baldrige Quality Award framework, other quality models described in Chapter 2, and the Ernst & Young IQS. The IQS study provides a substantial benchmark against which to structure this research questionnaire and compare certain results.

After developing the framework for the questionnaire, the initial questionnaire was circulated to a number of quality specialists. Recommendations from these quality and research professionals was then designed into the questionnaire and research methodology.

5.7.1 Pilot testing of the questionnaire

In order to validate the survey measuring instrument, the questionnaire was pilot tested amongst a small sample of individuals from two leading South African companies. The results from this pilot were used to upgrade the questionnaire.

5.7.2 Multiple respondents

It was felt necessary to have two separate questionnaires at different managerial levels (top management and middle/junior management) completed by each company targeted in the sample. The reason for this is based first on the experience gained in an earlier study in which top management demonstrated an overly optimistic view of the success of their quality initiatives, while lower level management appeared to have somewhat differing perceptions (Weitz 1990:25). The second motivation was the methodology used in the IQS study (Ernst & Young 1991:38) where several questionnaires were completed by different individuals in each company to avoid personal bias. The number of questionnaires used in this study was limited to two primarily because of cost limitations.

5.7.3 A temporal dimension

Another important dimension to this study and questionnaire design is a temporal dimension. The questionnaire is designed to assess historical, current and projected future practices in key areas amongst the surveyed sample. This is again in line with Ernst & Young's IQS research methodology.

5.7.4 Questionnaire confidentiality

Because the questionnaire requested certain information which might be considered confidential by the respondents, certain controls were put in place to assure the confidentiality of the questionnaires and information collected. Firstly, questionnaires mailed to companies and completed did not have the name of the company shown on the questionnaire itself. A confidential code number was used to ensure that if questionnaires were seen by unauthorised individuals, the data could not be linked with a particular company.

5.7.5 Research response rate and questionnaire format

The research study has a relatively large scope and the questionnaire itself is therefore lengthy in relative terms. It was estimated that it would take up to ninety minutes of dedicated time for each respondent to complete the questionnaire in a thorough manner. To enhance the probability that respondents would take the study seriously enough to dedicate this amount of time, a number of approaches were used. Firstly, the name of the South African Bureau of Standards was important to lend additional credibility and importance to the study. It is felt that the cover letter signed personally by the SABS President created an image of credibility and importance essential to the success of the study. The questionnaire itself will also be designed and printed in a high quality style and format - the impression by the respondent needed to be one of a high quality, and credibility, justifying substantial time and effort on his/her part. The responding companies were all offered a comprehensive report of all top line findings in the study.

It is important as a comparative benchmark to note that the Ernst & Young IQS study questionnaire included over 100 questions compared to 47 in this study. The IQS

study received a remarkable 84 percent response rate despite the fact that the time investment for each company was very significant (Ernst & Young 1992:62).

5.7.6 Maximising questionnaire response rate

A number of additional methods were used to maximise the response rate:

- After the first mailing of the questionnaires, a telephonic follow up to each company was conducted to assess whether the questionnaires were received, were completed, whether there were any queries on the questionnaire content and whether the questionnaires were ready for mailing or pick up by a member of the research team.

- Respondents were provided with a comprehensive top line report on the research findings.

5.8 Research validity

Validity is concerned with the soundness or effectiveness of the measurement instrument, in this case the questionnaire (Leedy 1989:28). Validity in measuring (or in TQM terms, auditing) the soundness of quality management is basic to the field of quality management and indeed basic to this research, in the sense that methods such as the Malcolm Baldrige Award system, the ISO 9000 and other quality systems described in Chapter 2, attempt to create a framework for assessing, or auditing, the integrity or validity of quality management systems in companies around the world.

Historically the most common definition of validity is the extent to which a test (questionnaire in this case) measures "*what it is supposed to measure*" (Ghiselli et al

1981:266). In this case the validity question is whether the questionnaire indeed measures the dimensions of quality management.

The following elements of validity have been considered:

- **Content or face validity**: This is concerned with the degree to which the research questionnaire, in this case, in fact measures the dimensions of quality management. In this study content validity was considered by using the Baldrige and ISO 9000 criteria as the basic framework for structuring the questionnaire. In so far as these criteria are accepted worldwide as acceptable criteria for quality systems, they were considered appropriate for this study. Concerns for content validity did surface to some degree based on input from various respondents concerning the complexity of the questionnaire however. Content validity could have been improved further through the use of other supporting instruments or methods such as personal interviews and observation, however the cost and time implications were considered to onerous.

- **Criterion validity**: This is concerned with a standard or benchmark against which to compare the results of the questionnaire. Criterion validity research was maximised by benchmarking the research scope and research instrument with the international quality study conducted jointly by the American Quality Foundation and Ernst and Young consulting group. This widely accepted study enhances validity in terms of ensuring that the questionnaire can be compared to an international benchmark.

- **Construct validity**: This is concerned with the validity of measured items such as leadership, human resource management, strategic planning and other constructs used in this study. The question is whether the questions concerning these constructs actually measure these constructs. This is certainly an issue of concern

given that each item (e.g. leadership) is a complex issue in its own right, and to accurately measure these constructs through a few questions is understating the complexity of them. In order to limit the complexity of the questionnaire (it has already been noted that the questionnaire was possibly too complex) the Baldrige and ISO 9000 frameworks were used. The assumption here is that if the assessments in these frameworks are accepted internationally then they are suitable for this study.

- **Internal validity**: This is concerned with the freedom from bias in drawing conclusions from the data collected. While Cook and Campbell (1976:227) discuss a variety of potential threats to internal validity, the primary threats pertinent to this study are selection and causal influence ambiguity. Selection threats occur when an effect may be due to the sampling approach which creates bias as a result of the sample profile. This risk is pertinent here in that respondents to this type of survey are likely to have an interest in the subject matter and it is therefore not unlikely that responding companies may perform better as a result of this interest. Clearly this would produce a biased sample. Internal validity was enhanced by the use of more than one financial performance criteria (five) being used as well as a fairly comprehensive measure of quality management.

Threats to internal validity through ambiguity of the direction of causal influence is a concern in this study. A rejection of the hypothesis still implies that a relationship exists between quality management and financial performance of companies in the sample. It should not be necessarily implied that quality management improves profitability, although this has been suggested by the PIMS studies noted earlier. Directional ambiguity exists where it may be possible that better performance may allow improved quality management to take place through, for example, greater funds being available for, say, increased investment into technology compared to less profitable companies.

- **External validity**: This is concerned with generalisability of the conclusions reached through observation from the sample to the universe. It is believed that some caution must be exercised in this regard since there was a broad range of industries represented in this study with a small sample being drawn from each. While inferences may be made to the broad scope of industry in general, inferences to specific industries cannot be made.

5.9 Research reliability

Reliability deals with the accuracy of the instrument used in making the measurement (Leedy 1989:28). Ghiselli et al (1981:191) define reliability as the extent of unsystematic variation in the quantitative description of some trait measured in a population sample when the same sample is measured a number of times or in parallel tests. In this study "*Cronbach's coefficient alpha reliability index*" is used (Ghiselli et al 1981:256) which has a maximum of 1.00. A Cronbach's coefficient alpha of 0.96 was achieved for this research providing this research tool a high level reliability.

Reliability was maximised in the questionnaire through the following methods:

- The number of items in the questionnaire was relatively high thus maximising the reliability (Ghiselli et al 1981:261). Various questions were asked in different ways in various areas of the questionnaire and the aggregated in the factor analysis. While this did increase the physical size of the questionnaire and make it more laborious to complete, it did have the result of increasing reliability.

- Unsystematic error was reduced by what Ghiselli calls "*good housekeeping*". Through pre-testing of the questionnaire, to ensure that different people interpreted the questions in the same way, reliability was maximised. Clearly

interpretation difficulties would be a major contributor to low reliability. While it was felt after pre-testing that a reasonable degree of clarity had been achieved, it became clear that a number of respondents found the questionnaire overly complex. Further on good housekeeping significant effort was made to maximise the care given by respondents to the completion of the questionnaire through a very professional, high quality questionnaire. Anecdotal evidence suggests that this professional image did have the desired result in many cases. In one case a leading company assembled a team of top executives to collectively complete the questionnaire. In the case of another holding company, the managing director requested permission to shorten the questionnaire for their own purposes as well as responding to the study.

- Dual questionnaires were used to test the perceptions of middle management versus top management to assess potential bias or the "*halo effect*" discussed in section 5.8.3. The concern for reliability here is that any bias amongst top management responses may distort correlational analysis.

- Reliability of financial data was maximised by utilising data from well known and credible objective sources, namely McGregor's Online database and the Business Times 100 performance score, rather than relying on performance data from the companies themselves.

5.10 Project management of the research

Given the fact that this study was funded by a leading financial institution and the South African Bureau of Standards, but was not conducted on a full-time basis, required a disciplined and structured project management approach. This scope and need for this approach is best defined by Kerzner (1989:2) in his definition of project management as being any series of activities and tasks that:

- have a specific objective to be completed within certain specifications,
- have defined start and end dates,
- have funding limits, and
- consume resources (money, people's time, equipment)

and include activities, amongst others, such as:

- project planning,
- definition of resources needed and monitoring of resource usage,
- development of time lines and target dates for delivery of outputs,
- tracking progress, and
- analysing impact,

and having the benefit of maximising the achievement of project objectives:

- within time and
- within cost budgets

5.10.1 The need for project management

This research project involved in excess of eight people working as a temporary project team on the different aspects of the research at various times and in parallel over approximately three years. This, together with relatively high costs being incurred by a major sponsor, as well as another co-sponsor whose name was used in this study, and the fact that the study required substantial effort from over 100 companies who expected some form of informational benefit, required a degree of disciplined planning.

5.10.2 Research budget and financing

Original estimates for the research which were adhered to during the two year period were as follows:

TABLE 5.2 RESEARCH BUDGET AND FINANCING

BUDGET CATEGORIES	COST ESTIMATES
• 24 page questionnaire booklet form	R 1 400
• 500 outer envelopes with printed logos	R 750
• 1000 reply paid envelopes + printing	R 950
• Printing of covering letter on SABS paper	R 230
• Mailing/franking of envelopes, postage	R1 800
• Printing + labels for envelopes	R 120
• Follow-up phone calls to companies	R 500
• Printing and binding of final thesis + report to responding companies	R 200

(Table continued on next page)

• Data capture of questionnaire, coding	R 360
• Costs for statistical analysis and manipulation	R 2 000
• **TOTAL COSTS**	**R 8 320**

5.10.3 Obtaining sponsors

It was clearly necessary to obtain financial sponsorship for this study given the relatively high costs involved. A major financial institution was approached and agreed to provide funding. This company also provided a 386sx based micro computer with 80mb harddisk and laser printer for completion of the project.

It was also considered necessary to obtain sponsorship in name to provide a high degree of credibility for the research subject at hand. The President of the South African Bureau of Standards was approached and agreed to allow the name of the Bureau to be used after scrutinising the research proposal and the project plan.

5.10.4 Human resource management

The study required a significant effort in administration and secretarial work, and the sponsoring financial institution agreed to provide these resources. This included the production of the target sample list of companies obtained and looking up and typing the names of managing directors and company names and addresses. Due to the fact that there was a substantial period between compiling and mailing, all names and addresses had to be checked prior to final mailing.

Additional resources were required in the stuffing of envelopes and mailing of the almost 300 packages. It was also necessary to arrange for the receiving and opening of all returned envelopes and screening for completion.

A specialist telephone interviewer was used to contact all targeted companies to remind them of the final deadlines for return mailing and to answer any questions arising from the relatively complex questionnaire. This follow-up was conducted twice six weeks apart to companies who had not returned the questionnaire, which were numbered for purposes of confidentiality. A sizable task ensued when a number of companies disseminated additional questionnaires to subsidiary companies for which no record was held on the database. Substantial effort was required to gain company names and objective financial data for these companies. In a number of cases arrangements were made to physically take delivery of the completed questionnaires from the companies as the final deadline approached.

5.10.5 Statistical analysis

The UNISA Department of Psychology was approached to provide specialist assistance and guidance for the coding, capturing and statistical reporting and manipulation of the data obtained in the questionnaires. The mainframe based SAS software was used by the Department in the analysis of the data. The data on file were later transferred to disk for import into a spreadsheet format for further analysis at some later date.

5.10.6 Typing, production of graphs and tables and printing

Arrangements were made to utilise Microsoft Word and Microsoft PowerPoint to type the transcript and to create and automatically embed graphs and tables. Printing was completed with a Hewlett Packard Laserjet IIP.

5.10.7 The project timelines

The following table provides an overview of the approximate activities and timelines which were adhered to during the project:

(Table 5.3 ...)

TABLE 5.3 PROJECT TIMELINES

ACTIVITY /MILESTONE	END DATE
• Background research for proposal to University	March 92
• Submit proposal for consideration by University	May 92
• Proposal accepted for MComm	September 92
• Begin detailed background review of the literature	January 93
• Discussion with specialists and practitioners	April 93
• Present first draft of literature review and scope of the subject to Advisor	May 93
• Develop statement of the problem and formulate the hypothesis	November 93
• Define and draft chapters on research methodology	January 93
• Obtain financial support (approach financial institution)	January 93
• Obtain sponsorship in name from the SABS	April 93
• Complete work on development of target sample database	May 93
• Design and test questionnaire and mailing package	June 93
• Assemble computer equipment	July 93
• Assemble questionnaire packs and mail	September 93
• Set-up information support to responding companies	October 93
• Conduct follow-up to non responding companies	January 94
• Conduct screening of returned questionnaires	January 94
• Coding and data capture of questionnaires	January 94
• Obtain objective financial performance data for companies	January 94
• Conduct statistical analysis	February 94
• Analysis, interpretation and write up of results	February 94
• Formulation of new model for change and innovation - write-up	March 94
• Submit chapters for review	March 94
• Notify University of intended completion date	April 94
• Write-up final chapters on recommendations and conclusions	April 94
• Submit full thesis for final review by advisor	May 94
• Make final alterations	May 94
• Final print and arrange for printing and binding	May 94

• Draft of journal article	June 94
• Final submission	June 94
• Arrangements for preparation of reports and mailing to responding companies	June 94
• Prepare and conduct presentations to various organisations on results	August 94

5.11 Conclusions

While significant effort was made to maximise reliability and validity in this study, caution must be exercised in interpreting conclusions broadly to specific organisational contexts. As noted, the data presented do not imply cause and effect but rather present relationships between quality management and financial performance as well as profiles of better performing versus poorer performing companies.

CHAPTER 6

STATISTICAL ANALYSIS OF THE DATA

CONTENTS

6.1 Introduction

This chapter reviews the statistical manipulation and analytical techniques used on the data.

6.2 Statistical techniques applied

6.2.1 Level of significance

The level of significance is defined as the largest probability appropriate for accepting the alternate hypothesis when the null hypothesis is actually true (a Type I error) - in this case, for the primary hypothesis, for accepting that a positive correlation exists between quality management and financial performance of companies, when in fact no correlation exists (Dyckman & Thomas 1977:377). In this study the ramifications of

making a Type I error in a two-tailed test are not extreme and therefore a 0.05 level of significance has been selected.

6.2.2 t-Test for dependent measures

It was noted earlier (see section 5.8.3) that concerns originally existed that measurements of top management opinions may incorporate a "*halo effect*" - in other words, they may overrate the performance of their companies on important dimensions of quality management when compared to middle management who have a more micro (or realistic) view of quality management. To determine whether any halo effect existed in the data, a t-test for dependent measures was conducted for the top management sample and the middle management sample. The purpose of the t-test for dependent samples in this study is to decide whether the difference between two sample means may be due to chance or to a true difference between the population means of the two management levels tested (Shavelson 1981:555). The sampling distribution of t is used to determine the probability of an actual difference between means in the population. It should be noted that only 38 companies returned questionnaires for middle management versus 77 used for top management. This meant that 38 paired observations were available for the t-test of dependent measures (top management versus middle management).

Table 6.1 below demonstrates that at the significance level of 0.05 no significant difference exists between the mean ratings for top and middle management regarding all key quality management factors. For this reason, and since a larger number of responses were available, the top management responses have been considered sufficient, and only these data are used in further analysis.

TABLE 6.1

COMPARISON OF TOP MANAGEMENT VERSUS MIDDLE MANAGEMENT REGARDING KEY FACTORS

(No. of paired responses =38)

FACTOR	MEAN TOP/MAN	MEAN MID/MAN	t SCORE	p-VALUE
F1 Results orientation	2.26	2.36	-0.86	0.39
F2 Leadership, planning	1.92	2.14	-1.49	0.15
F3 Customer focus	2.20	2.24	-0.34	0.73
F4 Appraisal, reward	2.56	2.74	-1.16	0.25
F5 Communication, training	2.32	2.37	-0.47	0.64
F6 Quality standards	2.00	2.08	-0.74	0.47
F7 Process monitoring	2.01	2.14	-1.09	0.28
F8 Improvement techniques	2.39	2.68	-1.93	0.06

6.2.3 Factor analysis

Factor analysis is designed to identify latent or hypothetical variables (or factors, dimensions or components) that explain the clusters of empirical correlations found between observed variables, items or questions. The rationale of this technique is that those items which correlate significantly with each other do so because they share or refer to the same concept or construct. Kerlinger (1986:569) describes factor analysis in the following way:

> *Factor analysis serves the purpose of scientific parsimony. It reduces the multiplicity of tests or measures that belong together - which ones virtually measure the same thing, in other words, and how much they do so. It thus reduces the number of variables with which the scientist must cope. It also*

helps the scientist locate and identify unities or fundamental properties underlying tests and measures.

Child (1990:1) describes this technique as "*orderly simplification*" and goes on to describe a factor as follows: "*When a group of variables has, for some reason, a great deal in common a factor may be aid to exist. These related variables are discovered using the technique of correlation*".

The following steps were followed in applying factor analysis to the data collected in the empirical research:

- Step 1: A Scree Plot of Eigen values was produced which graphically demonstrated the separation of factors.

- Step 2: The computation of a correlation matrix between items used in this study was produced. The Pearson product-moment correlation matrix was computed in this step.

- Step 2: A decision was made concerning the number of factors to be extracted. Factors with Eigen values greater or equal to 1.0 were extracted.

- Step 3: The solution matrix (factor pattern matrix) was rotated according to the Varimax criterion. The values in the solution matrix are referred to as factor loadings and give the correlations between the original items or questions and the derived factors. By analysing those items which correlate highly (a factor loading of 0.35 was selected as the cut-off point for significance) it was possible to identify the items to be included in the factors. This solution matrix is provided along with the description of each factor in section 6.3.

Limitations of correlational analysis: Correlational coefficients cannot be used to imply causality, and therefore results of this study cannot be used to imply that higher ratings on the Strategic Quality Score directly leads to greater corporate performance. Particularly in the South African experience in which "*normal*" market forces as experienced in many developed economies are not necessarily operating, care must be taken with correlational analyses. For example in the PIMS analysis reported earlier the correlation between quality and profitability in companies in the United States and Europe was strong. However the situation may not may be entirely different in South Africa because of this country's historic isolation from the international markets and resulting constrained competitive environment and marketplace consumer pressures.

Correlational coefficients are not direct proportions and therefore variables with twice the r score of other variables do not exhibit twice the relationship.

Correlational coefficients are sensitive to the range of the scores observed for each variable. In the case of this study the range of corporate performance was broad, and the range of factors comprising quality were also reasonable broad and are therefore considered adequate to satisfy this requirement.

6.2.4 Factors emerging from the factor analysis

Chapter 3 deals with the differing views of a number of quality management experts concerning what should or should not be included in an evolving scope quality management. In the light of this debate factor analysis was considered particularly necessary for this study to ensure that the constructs or dimensions of what determines effective quality management in companies are appropriate. While it has been noted under research validity (section 5.9) that the Baldrige criteria and ISO 9000 criteria were used to maximise validity, no identified study specifically used

these dimensions in a survey research methodology and thus no adequate benchmark for correlation against profitability exists.

It is the objective of factor analysis to represent variables (such as quality management in the case of this research) in terms of a number of underlying factors or constructs (Harman 1976:14). When variables demonstrate high commonality and intercorrelate highly, a factor is said to exist. In the case of this research it needed to be determined if certain items had greater commonality than was originally structured into the questionnaire through the use of the Baldrige/ISO 9000 structure. The dimensions of quality management used as the basis of the questionnaire construction in this research study are: **Leadership, Quality Information and Analysis, Strategic Quality Planning, Human Resource Management, Management of the Quality Process, Quality Results, and Customer Focus**.

The objective of factor analysis as applied in this study was to identify whether these constructs were indeed the most appropriate dimensions of quality management in order to maximise the correlation with financial performance.

The factor analysis did identify a different structure, namely eight moderately different component elements as follows: **Quality Results Orientation, Leadership, Planning Quality Goals, A Customer Focus, Employee Performance Appraisal, Reward and Remuneration, and Internal Communication, Training and coordination.** Essentially, the original items which intercorrelated closely were linked together in a slightly different pattern, and are described broadly below with the specific items shown in Appendix 5.

6.3 Properties of the sample

6.3.1 Response rates and sample size

Of the 272 questionnaires mailed to organisations around South Africa, 107 responded demonstrating a 39% response. Of these, 18 companies returned blank, partially blank or otherwise unuseable questionnaires. Of the 89 companies providing useable questionnaires, financial data were unavailable for 12 of these companies from the independent sources. These companies were also unwilling to provide these financial data for reasons of confidentiality. The final sample size of 77 is considered small but not inadequate to perform the required statistical analysis. Van Deventer (1991:131) for example, included 65 companies in a doctoral research, of which 21 were in South Africa and 44 in Australia. Van Deventer quotes other studies, namely Watts and Higgins (1987) as well as Smilor (1987) both of which included fewer than 50 companies in their research.

6.3.2 Dual questionnaires

Of the 89 companies responding, 38 provided two questionnaires, one completed at top management level and one completed at middle management level. The purpose of this dual questionnaire approach, as noted in section 5.8.3 was to eliminate the potential "*halo effect*" described earlier. As noted in section 6.2.2 no significant difference between the opinions of top management and middle management was identified, and therefore the top management questionnaires were considered a reliable sample on which to conduct the statistical analyses.

6.3.3 Primary factors and variables used for analysis

The purpose of the study as defined is to investigate the evolving scope of quality management and determine the impact on, or correlation with, company financial performance. Given this purpose, the questionnaire by definition needed to be fairly extensive in order to explore potential areas of evolution in the practice of quality management. However, given normal time and cost limitations it was necessary, after all data were collected, to focus on those variables which appeared to have the greatest correlation with the various profitability ratios. The factor analysis was used to identify these variables. In particular the primary aim was to determine the possible impact of the factors underlying quality management and profitability and therefore those variables most closely associated with quality management were used in the correlation. It was initially thought that a single factor called *"quality management"* would be used in the correlational analysis. However it was subsequently felt that subtleties included in this rather broad factor would be lost. It was therefore decided that analysis would be separately conducted on the eight factors making up quality management performance.

6.4 Description of factors

This section provides a broad description of the factors identified through the factor analysis and which are used as the primary quantification of quality management. The loading factors are provided in Appendix 5.

Factor 1: A results orientation: The items included in this factor involve those dealing with the perception and conviction of top management concerning their companies performance of the key quality performance areas of customer satisfaction, business process cycle times, employee productivity, operating costs and aspects of

profitability. This factor also assesses whether management believe they achieve better quality related results than their competitors.

Factor 2: Top management leadership, quality planning and corporate goals for quality: This factor includes items related to top management's direct role as the visible force behind the quality effort, have the knowledge and skills to direct the effort and become personally involved in quality activities. Included also are whether top management have defined quality values and policies, and whether quality goals are included in corporate goals, and whether these are cascaded down effectively to be implemented at subsidiary level. This factor also includes whether top management specifically use quality as a mechanism to improve profitability and measure the results.

Factor 3: A customer focus: This factor assesses whether a company has developed long term customer loyalty, regularly measures customer satisfaction, benchmarks this to their competitors and believes they have more satisfied customers than their competitors. These companies tend to empower their employees to satisfy customers "*on the spot*" and focus on procedural flexibility in order to satisfy customers. Communication between superiors and subordinates on customer satisfaction issues is assessed.

Factor 4: Employee recruitment, appraisal, and remuneration: Included in this factor are the degree to which quality related requirements are included in recruitment practices, employees are appraised on quality and customer satisfaction performance issues and whether remuneration and rewards include quality performance related factors.

Factor 5: Training, communication and internal coordination: The degree of internal coordination and synergy is included in this factor, along with the

effectiveness of communication between entities and employees. The effectiveness of quality management skills training at all employee levels is also assessed. Closely linked to training is the effectiveness of communication between all employee levels.

Factor 6: Quality standards in key business processes: This is a somewhat smaller factor in terms of items, and essentially assesses whether there is attention given to the inclusion of quality and customer satisfaction performance standards in the management of key business processes, including product and service design, manufacturing, delivery to the customer, service and maintenance.

Factor 7: Quality monitoring and control: This is also a small factor with only five closely linked and overlapping items included. These relate to the use of supplier quality monitoring, specialised techniques used for monitoring and control, quality inspection, the use of techniques such as statistical process control and process cost analysis.

Factor 8: Quality improvement techniques: This factor is the smallest with only four items included. It includes the use of specific process improvement techniques such as process cycle time analysis, process reengineering, process simplification and value engineering.

6.5 Reliability of factors

The research reliability theory is presented in section 5.10 and the table below presents the Cronbach alpha reliability coefficients for the factors described above. These reliability values indicate a high degree of reliability for all factors.

TABLE 6.2: CRONBACH ALPHA RELIABILITY COEFFICIENTS FOR FACTORS

FACTOR	CRONBACH ALPHA
F1	0.894
F2	0.904
F3	0.807
F4	0.870
F5	0.834
F6	0.807
F7	0.781
F8	0.733

6.6 Financial performance ratios

Section 5.7.1 deals with the definitions and the logic of the financial ratios used in this study. Section 4.3.2 deals with concerns with current financial performance methodologies possibly being out of step with the success dynamics of companies in today's economic environment. In this light the link between quality management and profitability is a highly complex one and the possibility of a high correlation was considered with caution. It should be reiterated that the scope of this study was not to interpret the integrity of the various profitability ratios and their appropriateness for measuring the impact of quality management. It is suggested in section 9.4 that this be performed in future research.

6.7 Profile of the sample

TABLE 6.3 PROFILE OF THE SAMPLE

ITEM DESCRIPTION	CATEGORY	PERCENT
Operate formal quality system	Yes	81.3
	No	18.7
Type of quality system	ISO 9000	72.0
	Crosby	18.0
	Other	10.0
Number of years quality system in operation	Less then 2 years	33.9
	> 2 < 5	42.9
	> 5	23.2
Number of employees	Less than 1000	32.0
	> 1 000 < 5 000	40.0
	> 5 000 < 10 000	10.7
	> 10 000 < 20 000	9.3
	> 20 000	8.0
Industry	Agriculture, forestry	7.2
	Mining	11.6
	Electronics	1.4
	Information techn'gy	2.9
	Motor vehicles	7.2
	Electricity, gas, water	2.9
	Building materials	14.5
	Construction	5.8

Wholesale/retail	**8.7**
Food	**2.9**
Textiles	**2.9**
Pharmaceuticals	**1.4**
Transport	**2.9**
Finance, insurance	**13.0**

6.8 Conclusion

The factor analysis suggests that the various items initially included as the assessment of quality management was reasonably sound. However, based on this analysis, a number of changes were made to form a more suitable set of factors defining quality management.

CHAPTER 7

INTERPRETATION OF THE DATA

CONTENTS

7.1 Introduction

The questionnaire for this research included over 200 items to be completed by the sampled companies, and thereafter statistically analysed. For useful and meaningful interpretation, it was necessary to group the items, including the factors identified in the factor analysis, into broad categories. These categories facilitate a macro view of

the data, and improves the ability to view correlations between broad categories as well as with individual items. These categories can be aggregated under two broad headings which form the essence of the hypothesis for this research. The hypothesis states that the financial performance of South African companies is closely correlated with the evolving scope of quality management practiced in these organisations. The definition of the term "*scope*" is meant to define the extensiveness of the quality management system in companies, and can be aggregated into two broad categories as follows:

The comprehensiveness of the quality system: This is the degree to which companies include a comprehensive number of key business management practices and improvement techniques within their definition of quality management. These are defined by the eight factors (F1 to F8) described in section 6.3.

AND

The scope of integration and implementation of the quality system: This describes the degree to which this quality system is implemented in diverse business units or functional units throughout the company, and which demonstrate entrenched quality concepts, principles and goals. This category also includes the focus of this quality system on major improvements in core processes across the organisation.

NOTES:

- It has been noted previously that, amongst others, the joint American Quality Foundation and Ernst & Young International Quality Study (1992) is a

valuable benchmark against which to compare the results of this study, and therefore will be used in this chapter where appropriate as a benchmark.

- This chapter has been structured into two broad sections. The first, section 7.2, provides a macro perspective of the empirical data in order to gain an overview of the findings - Table 7.1 provides this overview in graphic form. The second section, 7.3, provides a more detailed micro analysis of each key aspect of the research.

(Table 7.1 ...)

TABLE 7.1

Correlation Matrix of Key Variables

☑ = Positive Correlation ☒ = Inverse Correlation

VARIABLE	DESCRIPTION	V2	V5	OPM	NPM	ROA	ROE	BTM	F1	F2	F3	F4	F5	F6	F7	F8
OPM	Operating Profit Margin								☒							
NPM	Net Profit Margin		☑										☑	☑		
ROA	Return on Assets														☑	
ROE	Return on Equity															
BTIMES	Business Times Index															
V2	Formal vs Informal Q									☑	☑				☑	
V5	Months in operation				☑											
V8	Market Share								☑		☑					☑
V9	Turnover	☑							☑		☑					
V10	Sales per Employee								☑	☑	☑	☑			☑	
V11	Total Assets								☑		☑					
V12	Profit Before Tax															
V13	Return on Investment			☑	☑			☑	☑							
V14	Profit as % of Sales	☑					☑		☑		☑					
V15	Return on Assets	☑				☑										
V16	Operating Cost/Employee										☑					☑
V17	% Stock Increase/5 years							☑								

LEGEND:
- F1 (Factor 1): Quality Results Focus
- F2 (Factor 2): Quality Leadership, Quality Goals, and Planning for Quality
- F3 (Factor 3): A Customer Focus within the Quality System
- F4 (Factor 4): Employee Remuneration and Reward for Quality
- F5 (Factor 5): Employee Communication, Training and System Coordination
- F6 (Factor 6): Quality Standards
- F7 (Factor 7): Process Monitoring and Control
- F8 (Factor 8): Quality Improvement Techniques

(Table 7.1 continued ...)

TABLE 7.1 (Continued)

VARIABLE	DESCRIPTION	V2	V5	OPM	NPM	ROA	ROE	BTM	F1	F2	F3	F4	F5	F6	F7	F8
V76	Process improvem't techn								☑	☑	☑		☑	☑	☑	☑
V77	Cycle time analysis								☑	☑	☑	☑	☑	☑	☑	☑
V78	Value engineering								☑	☑	☑	☑	☑	☑	☑	☑
V79	Reengineering								☑		☑	☑	☑	☑	☑	☑
V80	Process cost analysis	☑							☑	☑	☑	☑	☑	☑	☑	☑
V81	Statistical process ctrl								☑	☑	☑	☑	☑	☑	☑	
V82	Inspection techniques	☑						☒	☑						☑	☑
V105	Business strategic plan'g								☑	☑	☑	☑		☑	☑	☑
V106	Marketing management								☑	☑	☑	☑	☑	☑	☑	☑
V107	Financial management								☑	☑	☑	☑	☑	☑	☑	☑
V108	Business accounting					☑			☑	☑	☑	☑	☑	☑	☑	☑
V113	Employee communications								☑	☑	☑	☑	☑	☑	☑	
V114	Research & Development				☑				☑	☑	☑	☑	☑	☑	☑	☑
V115	Human resources management								☑	☑	☑	☑	☑		☑	☑
V116	Operation management			☑	☑				☑	☑	☑	☑	☑	☑	☑	☑
V117	Information systems management								☑	☑			☑	☑	☑	☑
V118	Training and development								☑	☑	☑	☑	☑	☑	☑	☑
V119	Manufacturing								☑	☑	☑		☑	☑	☑	☑
V120	Customer service								☑	☑	☑			☑	☑	
V121	Supplier management			☑					☑	☑	☑	☑	☑	☑	☑	☑
V122	Legal functions								☑	☑	☑	☑		☑	☑	☑
V123	Public relations			☑					☑	☑	☑	☑	☑	☑	☑	
V124	Social responsibility					☑			☑	☑	☑	☑	☑			☑
V125	Union relationship management								☑	☑	☑	☑	☑	☑	☑	☑

(Table 7.1 continued ...)

TABLE 7.1 (Continued)

VARIABLE	DESCRIPTION	V2	ISO	V5	OPM	NPM	ROA	ROE	BTM	F1	F2	F3	F4	F5	F6	F7	F8
V176	Core process vs function									☑	☑	☑	☑	☑	☑	☑	☑
V191	Flexible organis'l structure				☒						☑	☑		☑		☑	
V192	High centralisation											☑				☑	
V193	Internal skills approach vs Outsource	☑														☑	
V194	Restructure for customer focus										☒				☒	☒	
V195	Spans of control																
V196	Layers of management											☑					

7.2 Macro analysis of the empirical data

In analysing the interrelationship between factors, Table 7.1 shows a correlational "*map*" of these interrelationships. The ☑ signs indicate significant positive correlations, and the ☒ signs indicate significant inverse correlations at a significance level of 0.05. It will be noticed from this "*map*" that the factors making up the definition of quality management in this study (F1 to F8) show three (3) positive correlations and one inverse correlation with objectively measured organisational profitability. It should also be noted that Factors 1 to 8 form what this study has defined as a **system** of quality management and should also be considered in this correlation map as a single unit of analysis.

These correlations are:

- **A quality results focus** (F1) by companies is inversely correlated with **Operating Profit Margin (OPM).**

- **Quality training, employee communications and internal coordination** (F5) correlates positively with **Net Profit Margin (NPM).**

The use of quality standards (F6) correlates positively with **Net Profit Margin (NPM)**

Quality control and monitoring (F7) correlates positively with **Return on Equity (ROE).**

While three positive and one inverse correlations exist in this category, it is clear from the correlational map that these correlations are narrow in that they do not include all eight factors. Also, there is an anomalous inverse correlation with a particularly important factor, namely that of a **quality results focus** (F1). This suggests that companies which indicate that they focus more closely on achieving quality improvement results, perform more poorly on the profitability ratio Operating Profit Margin (OPM). This result contradicts the views of Schaffer and Thomson (1992:80) referenced in section 4.3.1, who suggest that the reason why quality efforts in many companies fail to demonstrate bottom-line results is because so many companies tend to focus on the "activities" of quality management rather than achieving results. Indeed the findings of this study contradict Schaffer and Thomson further in that, of the three factors which do correlate with profitability ratios, one factor could be labelled as a quality "activities", namely **quality training, employee communications and internal coordination**.

The remaining two factors are closer to a definition of a results orientation, namely **setting quality standards** and **quality control and monitoring**.

While the PIMS studies referenced in section 4.3.1, have shown for several years that a high correlation exists between relative perceived quality and ROI, in this study, Factor 3, a **customer focus**, demonstrates no correlation with any of the profitability scores. The remaining factors which show no significant correlation to profitability are **top management leadership, quality planning and corporate goals for quality**

(F2) **employee recruitment, appraisal and remuneration** (F4) and the use of **quality improvement techniques** (F8).

It should be further noted that the eight factors (F1-F8) encapsulating the scope of quality management do more broadly correlate positively with the perception of companies on their profitability relative to their competitors (V8-V17). In this case however it is **a results orientation** (F1) **a customer focus** (F3) and the use of advanced **quality improvement techniques** (F8) which are all positively correlated with various perceived relative (compared to the performance of competitors) financial performance scores, together with **Quality Leadership** (F2) **Employee Remuneration** (F4) and **Process Monitoring and Control** (F7) which also demonstrate positive correlations to a lesser degree. This implies that as companies increasingly believe they perform better on aspects of quality management, so their perception of their relative profitability (compared to competitors improves. It should be reinforced that as opposed to the objectively measured financial performance scores, V8 to V17 are purely the opinions of top management, but they do provide some form of subjective test of the relationships between these variables in this case.

Clearly, there is an overall positive relationship between companies scoring well in various dimensions of the scope of quality management and profitability.

There are a variety of reasons why these macro scenarios appear to exist. The next section attempts to analyse and interpret this rationale.

7.2.1 Research methodology and statistical analysis

The following possible reasons for the existence or absence of a correlation between variables are related to research methodology and statistical analysis and postulate that in fact a significant correlation between factors F1 to F8 and financial

performance does exist, however a Type II error has been made (the null hypothesis is accepted - there is no relationship) and explores possible reasons why these findings may exist.

Content validity: As noted in section 5.8, quality management is a broad concept and one which is difficult to quantify. It is quite possible that content validity for this study is inadequate. That is to say that the sensitivity of the research questionnaire was inadequate to assess whether a company is indeed managing quality well or poorly.

Construct validity: This is also a potential area of concern in that individual factors within the broader definition of quality management, such as leadership, human resource management, a quality results orientation and so on, are complex issues in their own right. A question exists whether a questionnaire of this type is capable of effectively measuring these dimensions. If this were the case, either no correlation would be demonstrated, or spurious results could occur.

Internal validity: This is another potential area of risk. It was noted previously (section 5.5) that it is possible for companies who are more positive about quality management to have been more likely to respond to this questionnaire. If this was the case, a narrower range of performance scores on F1 to F8 would have been sampled and this would have reduced the possibility of a correlation.

Sample size: This may also be a significant underlying reason why a limited correlation was demonstrated. Correlation coefficients are sensitive to small sample size and combined with the potential of a biased sample noted above, the likelihood of not demonstrating a correlation is further increased.

7.2.2 Business management related reasons based on the empirical data

Business management reasons suggest, as opposed to research methodology reasons, that there is indeed no correlation between quality management and financial performance, and that there are a range of business management reasons why quality management is not positively impacting corporate performance more broadly than is demonstrated in Table 7.1 and described above. This section describes potential underlying reasons.

Possibly the primary business factor behind a limited correlation between quality management and corporate profitability is the factor introduced in the Chapter 1 Introduction, which discusses the background behind so-called "*cracks in quality*" - that is, the perceived failure of many quality initiatives to "*deliver the goods*". These dimensions of quality management were then structured under the primary and secondary research problem statements in section 5.4. Following is a review of these dimensions, which have been broadly aggregated into two categories:

The comprehensiveness of the quality system (Factors):

- Factor 1: A results orientation
- Factor 2: Top management leadership, quality planning and goals for quality
- Factor 3: A customer focus
- Factor 4: Employee recruitment, appraisal and remuneration
- Factor 5: Training, communication and internal coordination
- Factor 6: Quality standards in key business processes
- Factor 7: Quality monitoring and control
- Factor 8: Quality improvement techniques

The scope of integration and implementation of the quality system:

- The degree to which the quality system is integrated into diverse business functions
- The magnitude of quality improvement sought
- Quality management as a mechanism for managing organisational change
- The application of quality improvement efforts to the limitations of traditional organisational structures

Other related factors arising from the empirical data:

- Management style
- Employee involvement, teamwork and empowerment
- A formal versus informal quality system, and the duration of the system
- The impact of negative economic conditions

NOTE: In order to reduce the possibility of including vague or equivocal responses in the analysis only the categories of **strongly agree** and **strongly disagree** are used in this analysis.

7.3 Micro analysis of the empirical data

The following sections analyse and interpret the empirical data related to the primary and secondary research problems, summarised in section 7.4 above, as well as a range of issues emerging from the empirical data.

Please note that in order to keep tables and figures intact on their own pages, in some cases they are moved to the following page for ease of reading, thus leaving a gap on the preceding page.

7.3.1 The comprehensiveness of the quality system

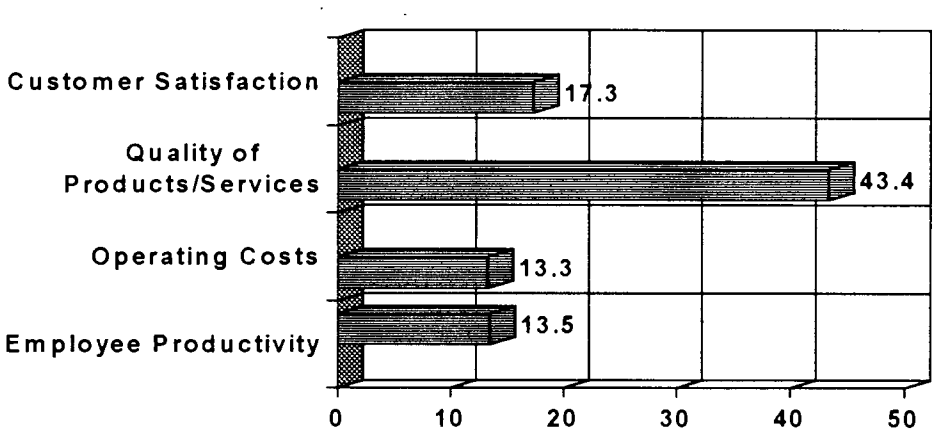
7.3.1.1 Factor 1: A results orientation

Referring to section 6.3 for a description of the factors, this factor involves items dealing with the perception and conviction of top management concerning their companies performance on the key quality performance areas of customer satisfaction, business process cycle times, employee productivity, operating costs and aspects of profitability. This factor also assesses whether management believe they achieve better quality related results than their competitors (relative profitability).

(Figure 7.1 ...)

FIGURE 7.1

Percentage of companies who strongly agree that their company's performance is superior to that of their major competition on the following criteria ...



Notwithstanding the possible research methodology reasons described in section 7.3, Factor 1 demonstrates a significant inverse correlation with corporate profitability (Operating Profit Margin, OPM). This anomalous result implies that as top management in the sampled companies increasingly believe that they perform well in specific areas of quality related to this factor, so their profitability ratios on OPM are lower. This suggests that top management either exhibit the "*halo effect*" described earlier (section 5.8.3) in completing the questionnaire (which is unlikely given the non significant difference found between top and middle managers scores noted earlier) or top management are poorly informed of the real impact that quality improvement has on their companies - possibly the corporate performance measurement systems in use are inadequate. For example, their perceptions may be positively biased by the relatively low use of competitive benchmarking identified in the data. Only 13% of responses indicate a high use of this methodology which was identified in section

4.3.3 as being a strategic mechanism for determining whether a company is performing at an internationally competitive level, or whether top management perceive small incremental improvements as a measure of success. Vermaak (1992:18) quoted in section 1.1.3, tends to imply this when he comments that "*business organisations in South Africa are in many instances today finding themselves in uncharted waters ... and apparently acting with yesterday's logic*". Without advanced international class benchmarking of critical performance areas, it is unlikely that top management will be in a position to accurately assess the impact of quality management on profitability and other performance measures. Another possible reason for an inverse relationship for this factor could be based on the criticisms of a short-term, narrow results focus rather than a longer term "*get the processes and the systems focused on the customer*" approach. Section 4.2.1 deals with this issue by quoting various writers who believe that the primary reason for lack of direct performance is a focus on the activities of quality management rather than being results oriented. However, it was noted in section 4.2.1, that not all specialists subscribe to a focused results approach. For example Imai (1986:16) contests any single-minded focus on results, and claims that Japan's success in quality and business performance is that Japan is a process-oriented society, while the United States is a results oriented society. *Kaizen*, says Imai, generates process-oriented thinking, which is necessary since every process must be improved and customer focused before results can be achieved.

The implications from the above evidence are strong - while quality management systems are vital for competitive advantage in the future, the system must be geared to achieving very specific and customer focused results, in particular relative market perceived quality and, in turn, profitability - but clearly the systems and processes must initially be the focus of attention. It is possible that expectations are often for short-term results without adequate attention to integrating a comprehensive quality system into the organisation which is process-oriented and customer focused.

A results focus also implies specific goals for quality improvement which are shared across the organisation. Table 7.5 demonstrates that while quality goals are clearly defined at top management level, they are far less common at unit level and very uncommon at worker level. It could be argued that without the latter goal focus, a true results focus does not exist - top managers responding to this study who have rated their companies high on this dimension of quality management have a very narrow concept of what this implies.

This inverse correlation is contradicted by the perceptions of top management that their relative financial performance based on a broad range of ratios is positive and it would be doubtful if top managers were as blatantly incorrect about their performance. This is supported by the finding that 27% of companies indicate that they maintain a database of quality related performance data and use these data to improve performance (see Figure 7.2). On this basis it is not unreasonable to consider this fairly substantial anomalous inverse finding to be spurious.

It is important to notice that F1 is positively correlated with V76 to V82, the use of quality performance improvement techniques, V105 to V125, the integration of quality principles and practices into diverse business functions, as well as with V176, a focus on business processes versus purely a focus on business functions.

It is also evident that a fairly high percentage of companies are involved in detailed measurement of their quality performance (see Figure 7.2 below) suggesting that there is a reasonably high level of performance monitoring amongst better performers. These positive relationships are logically sound and again support the possibility that the inverse correlation above is spurious.

FIGURE 7.2

The percentage of companies who make extensive use of the following performance measurement methodologies:

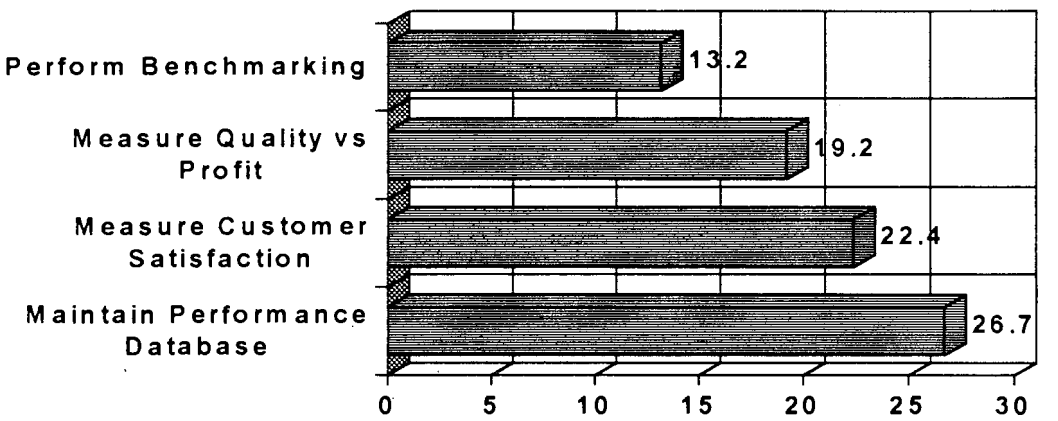
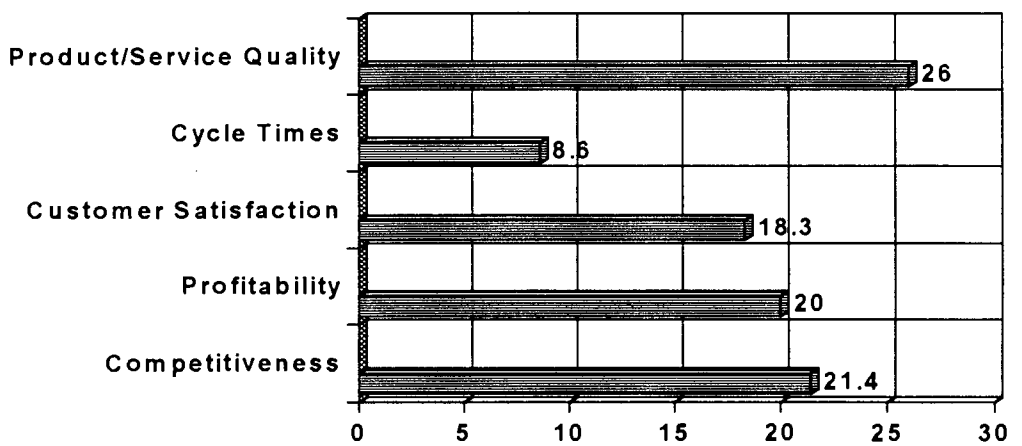


Figure 7.3 shows the percentages of companies who believe strongly that their company's quality system has improved a range of performance criteria. Factor 1 is partly comprised of these factors and these percentages show a fairly high level of perceived improvement. It is notable that while the better performers in this sample demonstrate a tendency to focus on business processes, the performance category of process cycle times receives the lowest rating. The IQS (1992:28) indicates that the best performers in their sample show a high usage of business process cycle time analysis.

(Figure 7.3 ...)

FIGURE 7.3

Percentage of companies who strongly agree that their quality systems have improved their companies ...

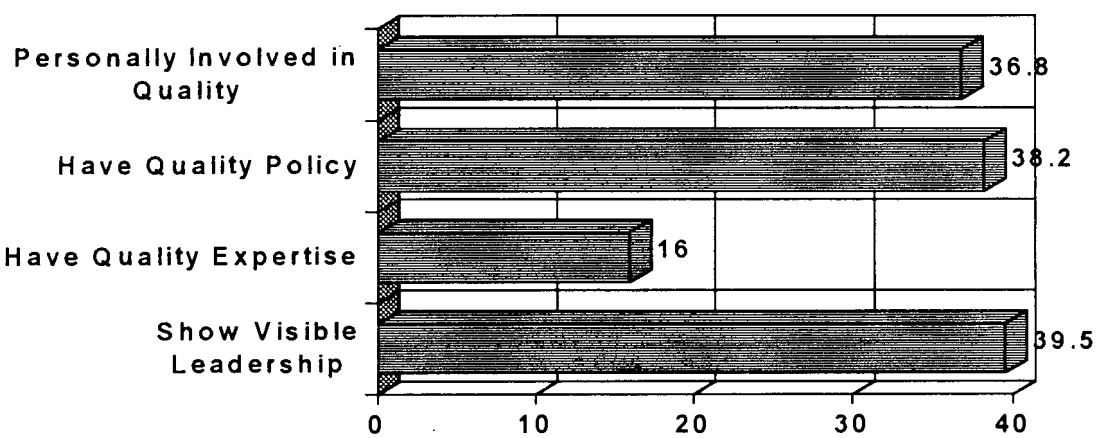


Interpretation of findings on Factor 1: A results orientation findings: While the correlation finding suggests that F1 is inversely correlated with profitability, the supporting data do not corroborate this. While top management may possibly be either unaware of the true impact of their improvement efforts on corporate profitability and other critical performance criteria possibly as a result of narrow perspective for quality improvement in their companies and a low usage of advanced measurement techniques such as benchmarking, it is more likely that the finding is spurious. Based on supporting data, such as the perceived financial performance scores, the high use of performance databases and the contradiction with secondary research, it is suggested that this is a spurious result.

7.3.1.2 Factor 2: Top management leadership, quality planning and goals for quality

F2 manifests a single significant positive correlation with financial performance, in this case, V10, relative perceived Sales per Employee. Top management believe strongly that they are the clear and visible driving force behind quality improvement efforts (40% strongly agree) but a far lower percentage believe that they have a high degree of expertise in this field (16% strongly agree). They also believe strongly (38%) that they become personally involved in quality improvement efforts.

FIGURE 7.4
Percentage of companies who believe strongly that top management ...



These positive findings are contrasted with those found internationally and referenced in section 3.4.2, where a survey conducted by Bowles and Hammond (1991:153) surveyed 40 Malcolm Baldrige Quality Award examiners. They were asked to name the most significant weakness identified in Award applicants. Examiners collectively identified this weakness as the "*failure to match actions to words about leadership*". Section 3.4.2 noted further that this is not the only study that shows a gap in the need

to *"walk the talk"*. Bowles and Hammond (1991:153) cite an ASQC Gallup Survey in which employees were asked to rate the degree to which top management follow through on what they say is important. The authors comment that "only" 36% gave their companies a 100% rating for follow-through. Baldrige examiners noted the most common action taken by a CEO after voicing commitment to quality was to turn responsibility over to a division president, vice president or steering committee without further major personal involvement. Again either South African executives are performing well relative to their international counterparts, or their perceptions have been clouded by years of isolation from stringent international standards and practices, and therefore feel that by South African standards they are performing well.

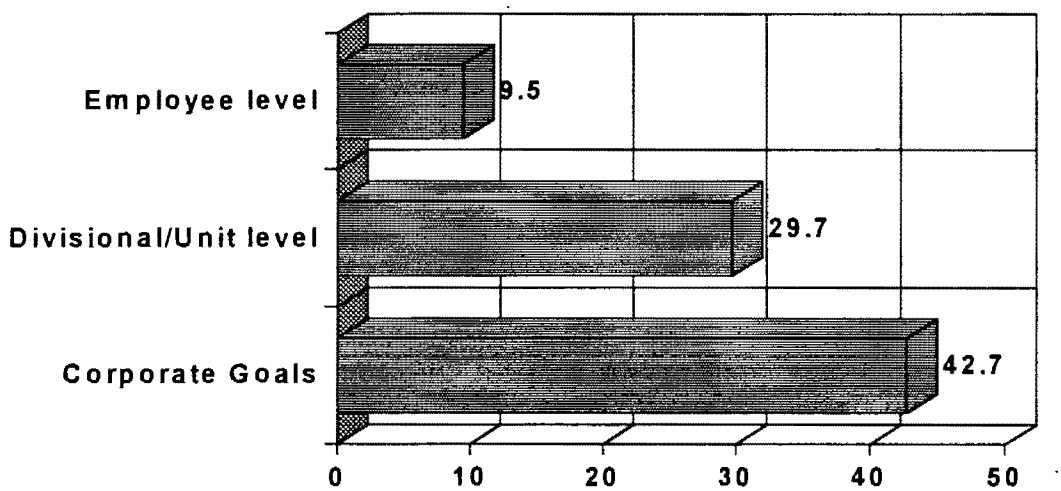
It is important to note that F2 is also positively correlated with V2 (companies with formal quality systems in place) and with V76 to V82, namely performance improvement methods and techniques as well as V105 to V125, the inclusion of quality principles and practices in diverse business entities. This suggests that companies demonstrating strong leadership, goals and planning systems for quality improvement, tend to have far more formalised and rigorous quality systems, involving more comprehensive improvement techniques and in a much broader range of business entities. Supporting the greater integration of quality across the organisation, these companies also demonstrate a greater focus on business processes (V176) than on functional units, as noted before, a very important requirement for quality improvement efforts. Also in support of this structural trend is the finding that strong leadership (F2) demonstrates a positive correlation with more flexible organisational structures (V191). Somewhat paradoxical is the finding however , that there is an inverse relationship between F2 and the intention to make structural changes to place more senior and experienced employees at the customer interface.

Included in F2 is the variable shown below which demonstrates a high level of goal orientation at top management level declining to a low level at worker level. It is

suggested that it is in the lower levels of employees that much progress will have to be made if greater impact on profitability is to be achieved.

FIGURE 7.5

Percentage of companies who strongly agree that quality goals are included at the following levels ...



Interpretation of findings on Factor 2: Top management leadership, quality planning and goals for quality: Top managers rate their performance on leadership for quality highly and the results they produce correlate well with these ratings. When leadership, goal setting and planning for quality is effective their appears to exist a minor link to better relative profitability, an extensive use of improvement techniques along business process lines as well as a far reaching integration of quality practices and principles into diverse business functions. Further to organisational structures, when F2 is strong there is greater structural flexibility and a greater focus of redesigning structure to more effectively place a focus on the customer.

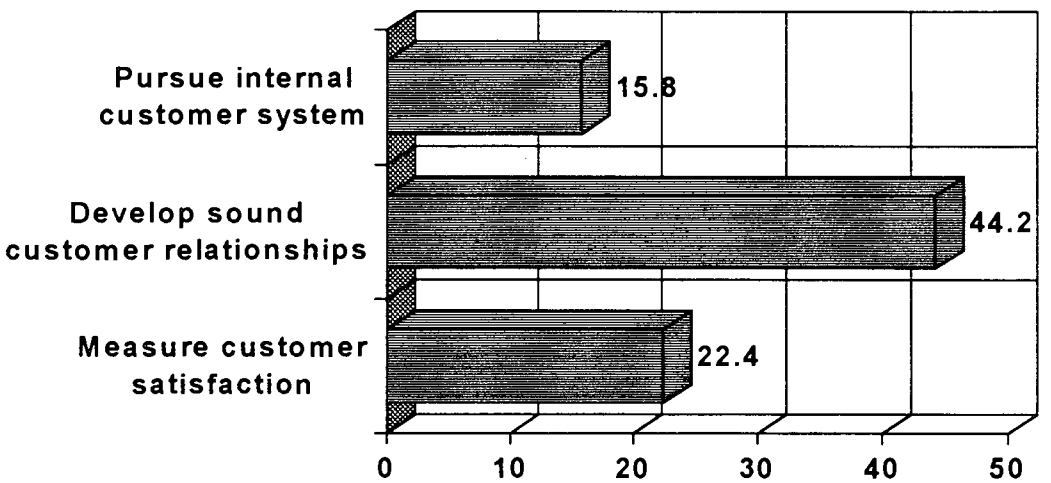
7.3.1.3 Factor 3: A customer focus

Contrary to what might be logically expected especially in light of the review provided in section 3.4.1 dealing with a focus on the customer, this factor does not demonstrate a significant positive correlation with any measure of objectively measured profitability, although a high F3 rating is significantly positively correlated with six of the relative perceived profitability ratios. Companies indicating that they operate a formal versus an informal quality system also demonstrate a significantly positive correlation with F3 indicating that they tend to be more customer focused than those companies with informal approaches to quality. It must be noted that the evaluation of a customer focus in this study is biased in the sense that it does not assess the perceptions of actual customers but rather the perceptions of top company managers on their opinions of their customer orientation. It is possible that actual customers may rate their satisfaction less positively than the top managers responding to this survey, thus reducing this correlation.

The PIMS research, referenced in section 3.3.5, has demonstrated a high relationship between superior relative quality and organisational profitability (Gale & Buzzell 1989:68, Robinson 1986:297). While responding companies indicate that they effectively assess customer satisfaction levels (22.4% strongly agree they do) there is a contradiction between two items in the questionnaire concerning customer satisfaction performance levels. On one item 30% of companies perceive themselves to perform better than competitors, in the other only 17% believe this to be the case. Middle managers respond only marginally more negatively with 28% and 14% respectively.

FIGURE 7.6

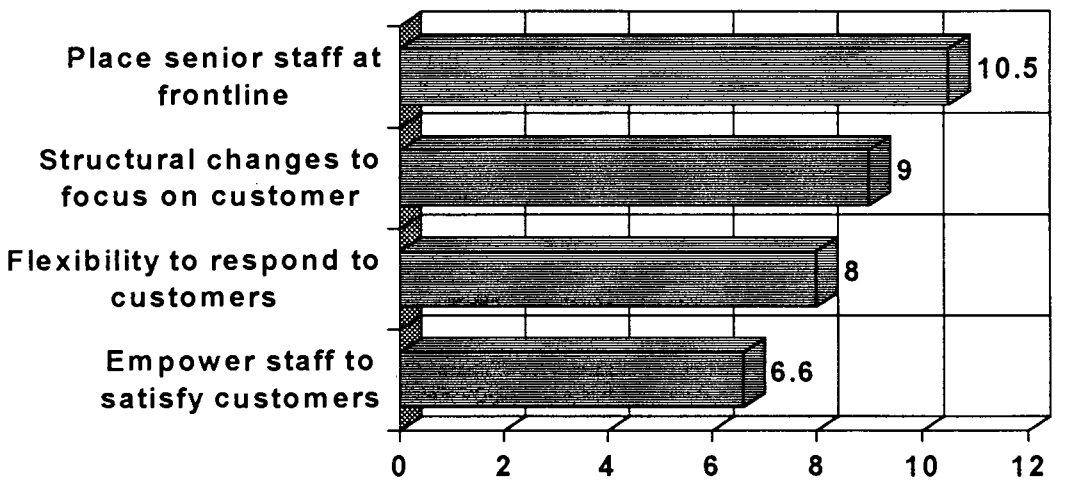
Percentage of companies who strongly agree that they perform well in the following areas:



A dimension of customer focus and satisfaction is revealed from the data relating to the degree of empowerment of employees on the frontline to satisfy customer needs "*on the spot*". Less than seven percent (7%) of companies believe strongly that employees are empowered. This tends to suggest that while perceptions of relative customer satisfaction is strong amongst companies, the action they take in tangible terms may not be quite as positive. This possible lack of action orientation is supported by a low ratio of companies (8%) indicating that they have flexible systems and processes in place specifically to respond rapidly to changing customer needs.

FIGURE 7.7

Percentage of companies who strongly believe they support the following quality initiatives:



Interpretation of findings on Factor 3: A customer focus: The data suggests that the perceptions of top management concerning their performances in customer satisfaction is not adequate to have a definitive impact on objective profitability. The views of top management on their customer focus is not supported by tangible systems, processes and procedures to ensure that improved quality results in customer satisfaction and ultimately enhanced profitability.

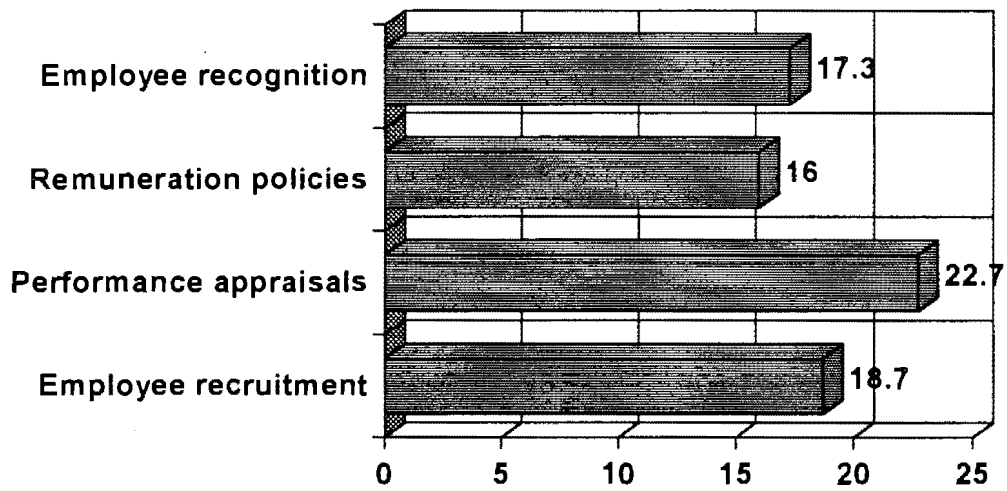
7.3.1.4 Factor 4: Employee recruitment, appraisal and remuneration

This factor is not correlated to any dimension of objective profitability, although one relative perceived profitability ratio does show a significant correlation (Sales per Employee). This finding is despite almost 23% of companies indicating that employee

performance appraisals, employee recognition (17%) and remuneration programmes (16%) are designed to support quality objectives of the company.

FIGURE 7.8

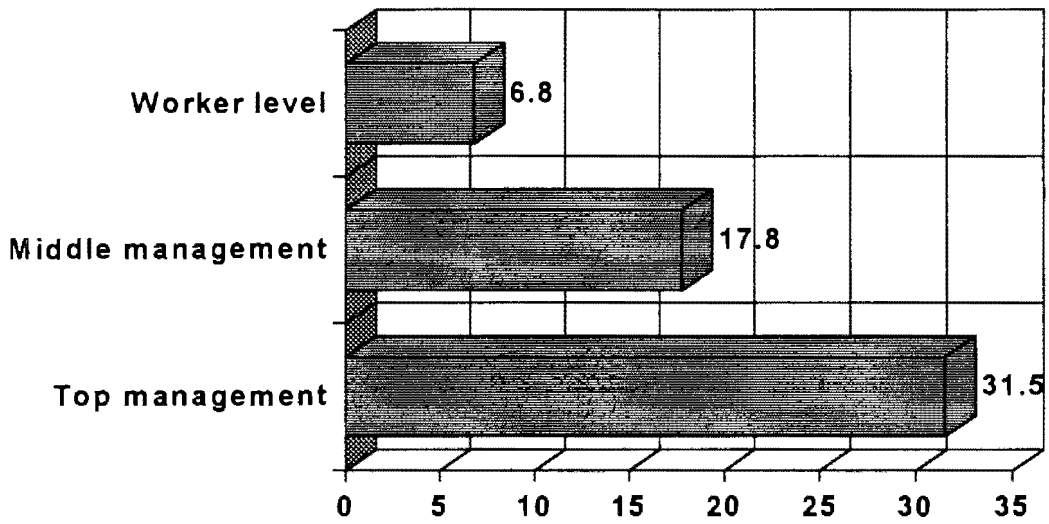
Percentage of companies who agree strongly that the following human resource systems are designed to support quality improvement:



When top managers indicate support of the quality objectives of the company by remuneration related processes, they appear to be commenting more on their own "*pay packets*" than those of lower level employees. While 32% strongly agree that top management appraisals and remuneration include quality goals and objectives, only 18% indicate that middle managers/supervisors are similarly appraised, and seven percent (7%) appraise and remunerate worker level employees on the basis of quality achievements.

FIGURE 7.9

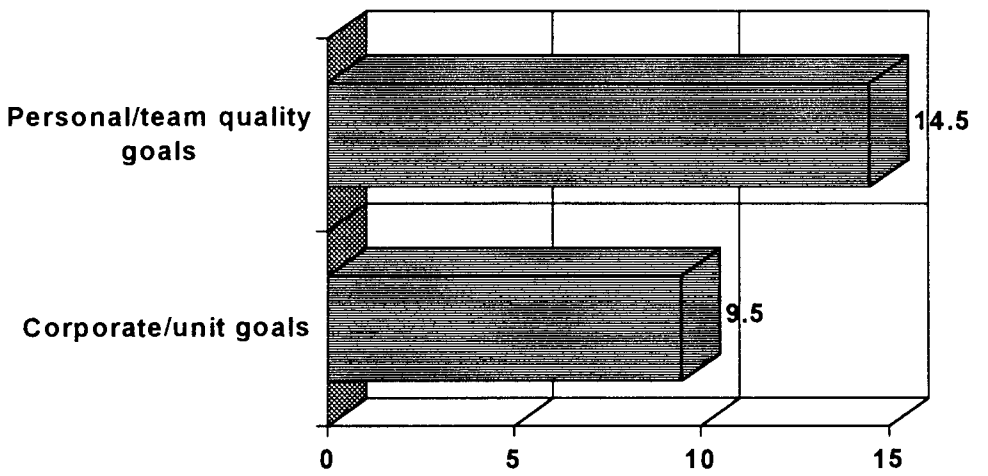
Percentage of companies who strongly agree that the following groups are appraised and remunerated in part on the basis of their performance in quality:



In fact less than 15% of companies have employees working towards specific quality goals and objectives. Top management remuneration practices in this sample are consistent with those found in the Ernst & Young IQS study (1991:23) which found that top performing companies place great importance on organisation-wide quality when assessing senior management for compensation purposes. The study also found that top performing companies emphasis team performance over individual performance in many cases.

FIGURE 7.10

Percentage of top management who believe strongly that all employees are directly affected or have personal responsibility for:



Interpretation of findings on Factor 4: Employee recruitment, appraisal and remuneration: Top managers tend to believe that they appraise and remunerate employees in part on the basis of quality goals and objectives However the practices and policies in place do not appear to support this. The low level of focus and involvement of employees towards quality improvement efforts, and the limited way in which rank and file employees are rewarded and recognised on the basis of quality goals, is a possible underlying reason why Factor 4 does not demonstrate a significant correlation to measurable corporate success.

7.3.1.5 Factor 5: Training, communication and internal coordination

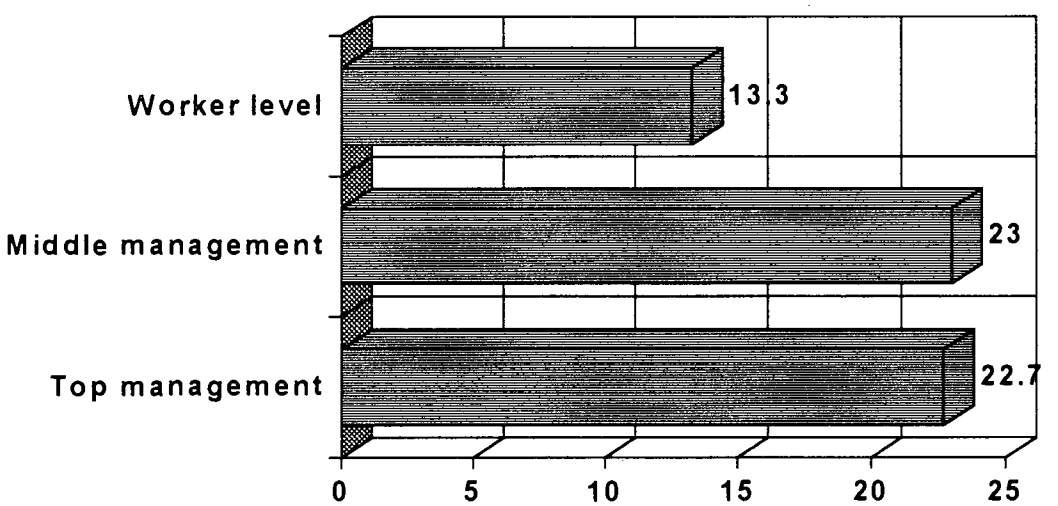
Factor 5 correlates significantly with corporate profitability (NPM). This does not imply causality, however, and indeed the empirical data behind this correlation are not significantly more favourable than other factors which are not correlated with

corporate profitability. This correlation is not supported by similar correlations with relative perceived profitability (V8 to V16). As a statement of principle or perception, companies in this sample strongly agree that education and training in their companies is developed to support corporate quality goals and objectives. At top management level this appears to be the case with 32% indicating that the training available to them allows them to management quality effectively. This is identical at middle management level with a 23% agreement that quality related training is adequate. This deteriorates more dramatically at worker level with only 13.3% indicating strongly that quality related training is adequate.

(Figure 7.11 ...)

FIGURE 7.11

Percentage of top managers who agree strongly that training available at the following levels is effective to perform at a high level in quality management:



Interpersonal communication as well as inter divisional synergy and coordination appear to be viewed by top management as necessary for organisational learning to take place. The factor analysis reviewed in section 6.2.3 aggregated these items together with those related to training and education. The views of top management relating to effective interpersonal communication horizontally between peers shows a 12% response of strongly agree. Communication between organisational units is significantly worse with an eight percent (8%) rating. Communication vertically between superiors and subordinates is somewhat better at 15%. Top management do however see the need for a significantly greater focus on employee communications in the future (266% greater - see Table 7.2). The IQS (1992:29) implies that communication of the organisational strategic plan to all employees, particularly

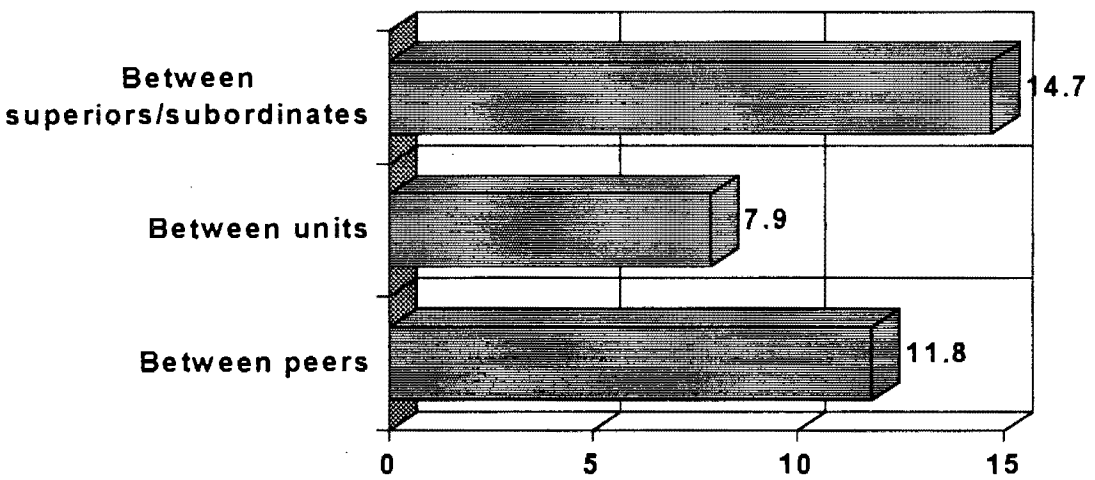
middle management, impacts positively on company performance. Clearly communication of this nature is fundamental to other dimensions of quality management such as involvement and innovation. This IQS evidence provides logical evidence for the significant positive correlation between Factor 5 in this study and profitability.

A significant positive correlation exists between F5 and V176, a core process orientation. Certainly the supporting literature provides support for improved communication and coordination in a process-oriented organisation as opposed to the traditional "*turf bound*" structures more common. Similarly F5 is positively correlated with V191, a flexible organisational structure. It is strongly implied from this that flexible, process-oriented organisational structures facilitate effective communications and coordination, which, in turn, impacts on improved profitability.

(Figure 7.12 ...)

FIGURE 7.12

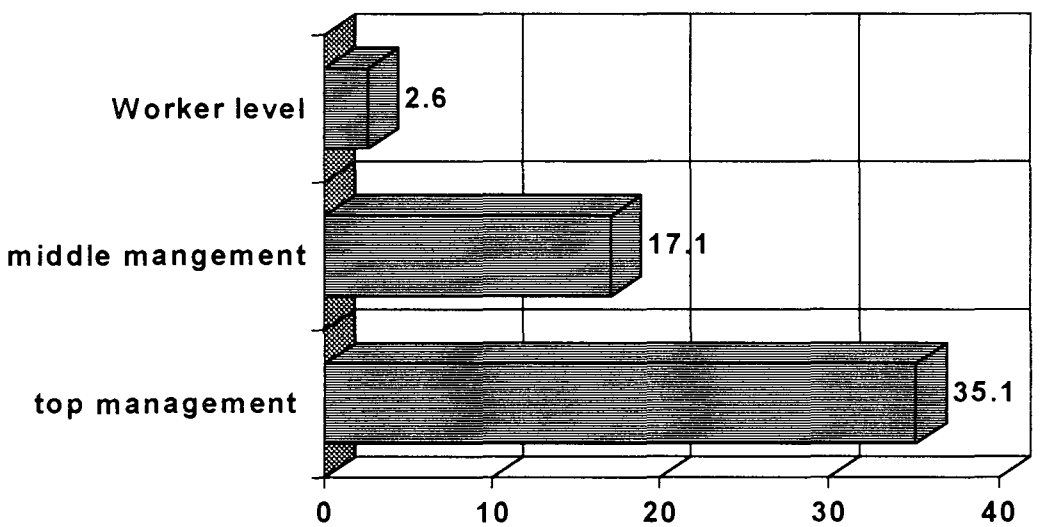
Percentage of top management who strongly agree that internal communication is effective at the following levels:



Of major importance for a quality system is the issue of inter-organisational synergy and coordination. Feigenbaum (1986:11) notes that a comprehensive quality system coordinates the actions of people, machines and flow of information to achieve the goal of customer satisfaction. Inter-organisational synergy and coordination is clearly vital to this end. Responding companies indicate a high degree of synergy at top management level (35% strongly agree) a moderate level amongst middle management and a very low level at worker level (less than three percent strongly agree).

FIGURE 7.13

Percentage of top managers who believe strongly that a high level of synergy, cooperation/coordination takes place at:

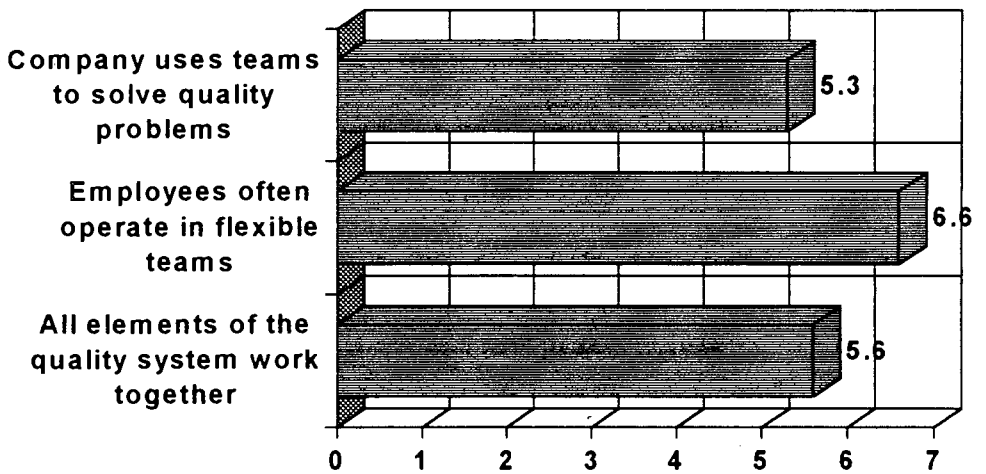


This is supported by data on teamwork (teamwork and synergy must operate in unison) where only seven percent (7%) indicate that employees tend to work as part of flexible work teams rather than as individuals. Section 4.11 deals with teamwork in more detail. Also of concern is the fewer than six percent (6%) of companies indicating that all elements of their quality system are effectively integrated to form an effective total quality management system.

(Figure 7.14 ...)

FIGURE 7.14

Percentage of top managers who strongly agree that:



Interpretation of findings on Factor 5: Training, communication and internal coordination: Training, communication and synergy appears to be at a reasonably high level at top management level but deteriorates quite significantly at lower levels. In addition, overall synergy and coordination amongst lower level employees and elements of the quality system is relatively low. Effective management of F5 does link strongly with a business process orientation and structural flexibility. The strong link between F5 and profitability is not supported by the finding that a low percentage of companies (six percent) feel their quality systems are effectively coordinated.

7.3.1.6 Factor 6: Quality standards in key business processes

The development and implementation of quality standards for quality improvement demonstrates a significant positive correlation with corporate profitability (NPM). This factor deals with the creation of methods to ensure the incorporation of customer requirements and rigorous quality standards into product and service design, rather

than considering these factors lower down in the value chain. Indeed F6 is positively correlated with V176, a business process organisational structure, which implies that the setting of quality standards is facilitated by a process structure.

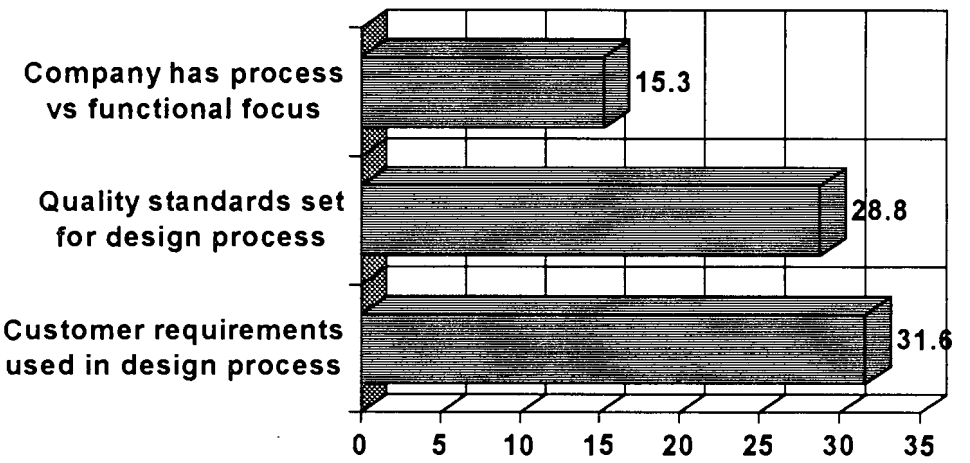
Factor 6 is an area which responding companies claim high marks. Thirty two percent (32%) of companies claim that this is an area of strength. Feigenbaum (1986:619) comments that the incorporation of customer information early in the design phase is critical to avoiding costly failures in the marketplace. Superior performance in this category of quality management clearly has a logical and direct link to corporate profitability.

Companies do not perform quite as well on a cross-functional process view of workflows and the setting of performance standards cross-functionally. Only 15% of companies strongly advocate this approach. The need for cross-functionality is noted by Feigenbaum (1986:661) that a high level of performance in new design can only be achieved through the integration of all functions with input into new product design, namely from engineers, technical personnel, design specialists and marketing staff.

Figure 7.15 ...)

FIGURE 7.15

Percentage of top managers who strongly agree that ...

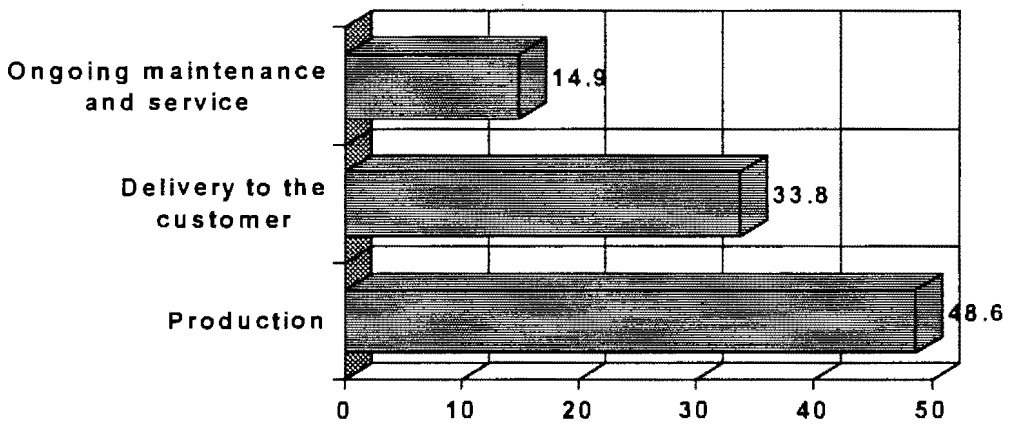


Given that the production line is historically the focus of quality management (see section 1.1.1) it is not surprising to note a very strong showing on the inclusion of rigid quality requirements and standards during the production process. Forty nine percent (49%) of companies perform strongly in this area. This strength declines significantly, however, as the product moves down the value chain closer to the customer interface. Thirty-three percent (33%) perform strongly in including rigorous standards in the delivery process to the customer, and only 15% do this in the maintenance and service processes.

(Figure 7.16 ...)

FIGURE 7.16

Percentage of top managers who agree strongly that quality performance against standards is effectively monitored during ...



Interpretation of findings on Factor 6: Quality standards in key business processes: This is, in part, a significant area of strength for South African companies, and therefore there is logical evidence to support a correlation with corporate profitability. As processes move closer to delivery and service to the customer, so these strengths decline. It is also suggested that a process-oriented organisational structure facilitates the setting of quality standards.

7.3.1.7 Factor 7: Quality monitoring and control

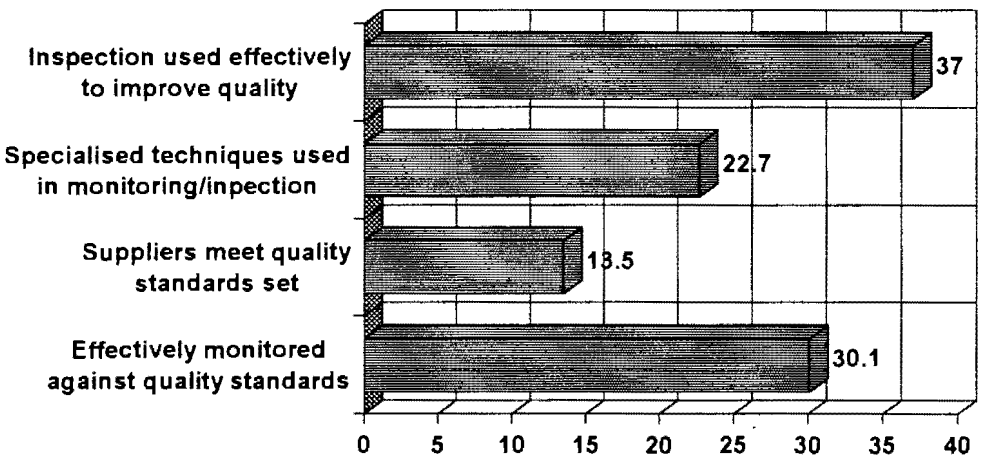
Factor 7 is the second somewhat traditional dimension of quality management which correlates significantly with corporate profitability (ROA). F7 is also positively correlated with the relative perceived profitability ratio of sales per employee (V10).

The strongest dimension of this domain is the use of inspection to control quality down the value chain. Thirty seven percent (37%) rate strongly in this area. Equally

impressive is control high up the value chain in the quality control of incoming materials from suppliers. Thirty percent (30%) rate highly in this area.

FIGURE 7.17

Percentage of top managers who believe strongly that for incoming material from suppliers ...



The control of costs alongside of quality is not quite as impressive, but still a strong area, with 20% of companies indicating a high focus. The origin of statistical process control (SPC) dates back to the 1930's, so it is cause for some concern that only 13.5% indicate a strong usage of this traditional monitoring technique. However, 23% of companies indicate a strong usage of monitoring and quality performance measurement techniques for critical processes.

This factor correlates positively with a number of structural dimensions. Again, these quality factors are strongly linked to a process structure. This certainly makes logical sense in that process control and monitoring is based, by definition on processes. Secondly F7 is closely linked to flexible organisational structures, which may be considered somewhat paradoxical - while flexible structures certainly provide many

advantages, allowing for improved quality monitoring and control does not logically appear to be one.

Interpretation of findings on Factor 7: Quality monitoring and control: The use of inspection techniques, cost control and SPC in the control of key processes is an area of strength for companies in this sample. Companies also perform well on incoming material control and process measurement and monitoring. Again the link between sound quality management and flexible organisational systems based on business process lines is supported. Therefore there is logical empirical evidence to support the correlation between the factor and corporate profitability.

7.3.1.8 Factor 8: Quality improvement techniques

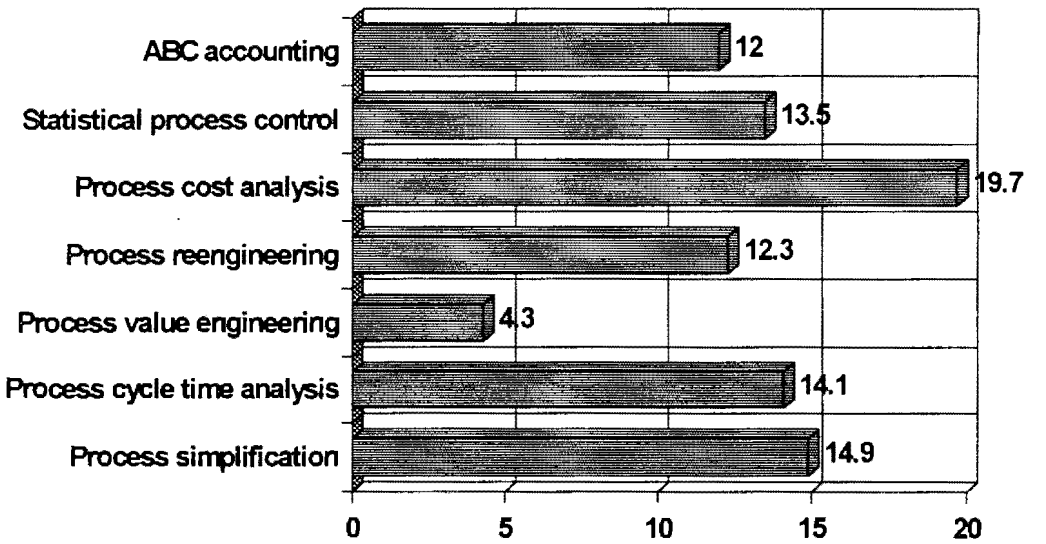
This factor does not demonstrate a significant correlation with objectively measured profitability, although a positive correlation exists between F8 and V8 (relative turnover) and V16 (operating cost per employee). The use of advanced quality improvement techniques includes very few factors (four) and therefore the probability of demonstrating a correlation is reduced. The application of quality improvement techniques for both incremental continuous improvement as well as major innovation for high performing companies in the IQS (1992:25) was found to be extensive. The IQS notes that the use of customer satisfaction measures, competitor measures and benchmarking as well as process cycle time improvement, a focus on reliability and responsiveness and other techniques and methodologies is the "*hallmark*" of the best performers. In contrast the use of quality improvement techniques in this sample is fairly low with fewer than 15% of companies utilising a mix of fairly common techniques. Feigenbaum (1986:807) would label many of these techniques as "*special process studies*", which he defines as *"investigations and tests to locate the causes of nonconforming products, to determine the possibility of improving quality characteristics, and to ensure that improvement and corrective action are permanent*

and complete". These techniques are usually directed at major areas of concern or potential improvement, and are considered vital for major breakthroughs in quality performance. These efforts require significant cross-functional coordination to be successful, since the scope of the processes are wide. Poor performance in this area does tend to suggest a lack of innovation on a large scale in sampled companies, and therefore may provide logical evidence on why there is no demonstrateable correlation with corporate profitability. This is supported by a positive correlation with V176, a business process orientation, which suggests that the application of advanced techniques is most effective with business processes and least effective within a functional structure.

(Figure 7.18 ...)

FIGURE 7.18

Percentage of top managers who believe strongly that the following quality improvement techniques and methods are effectively used:



Interpretation of findings on Factor 8: Quality improvement techniques: The empirical evidence suggests that sampled companies do not extensively apply advanced quality improvement techniques. Combining these findings with those discussed under employee involvement and teamwork, this suggests that techniques are also not used extensively by rank and file employees on micro improvements in their day to day work. This leaves a significant gap in the improvement arsenals of companies, and there is therefore reasonable evidence to suggest that poor performance in this area may be a contributing factor in not demonstrating a significant correlation with corporate profitability.

When improvement techniques are applied they are most effective in a structure based on business processes rather than functional structures, and their is some evidence that suggests that more profitable companies do apply these techniques more

extensively on core business processes as well as more extensively throughout functions in their organisations.

7.3.2 The scope of integration and implementation of the quality system:

7.3.2.1 The degree to which the quality system is integrated into diverse business functions

Table 7.2 shows a matrix of functional areas within companies which have been identified by responding companies as comprehensively including quality management principles and practices.

(Table 7.2 ...)

TABLE 7.2

QUALITY PRINCIPLES AND PRACTICES INTEGRATED INTO BUSINESS FUNCTIONS

BUSINESS FUNCTIONS	CURRENT QUALITY FOCUS	FUTURE QUALITY FOCUS	PERCENT IMPROVEMENT EXPECTED
Strategic planning	23.60	47.60	101.69
Marketing management	22.20	46.20	108.11
Financial management	27.40	43.80	59.85
Accounting	21.90	37.50	71.23
Employee communications	11.10	40.60	265.77
Research & development	14.10	36.50	158.87
Human resources management	13.70	39.10	185.40
Operations management	30.10	50.00	66.11
Information systems management	16.20	44.60	175.31
Training and development	20.50	56.30	174.63
Manufacturing	25.80	54.40	110.85
Customer service and support	22.20	63.50	186.04
Supplier management	19.40	50.80	161.86
Legal functions	4.60	7.00	52.17
Public relations	8.50	27.00	217.65
Social responsibility	9.60	28.00	191.67
Union relations	22.90	41.90	82.97

The integration of quality management into various functional areas demonstrates significant positive correlation with the certain profitability ratios identified below:

- Business accounting with Return on Assets (ROA)
- Research and development with Net Profit Margin (NPM)

- Operations management with Operating Profit Margin (OPM) and Net Profit Margin (NPM)
- Supplier management with Net Profit Margin (NPM)
- Public Relations with Net Profit Margin (NPM)
- Social responsibility with Return on Assets (ROA)

This suggests that more profitable firms rate the inclusion of quality principles and practices higher in these functions, while less profitable firms rate these functions lower in terms of the inclusion of quality principles and practices.

Table 7.3 below demonstrates that a number of these functions are also rated as more likely to currently include a quality focus as well as in the future. Operations management, while being correlated with profitability, is also considered to be the most likely to receive a quality focus.

(Table 7.3 ...)

TABLE 7.3

THE FOCUS OF FUTURE QUALITY PRINCIPLES AND PRACTICES

BUSINESS FUNCTIONS	CURRENT IMPORTANCE	FUTURE IMPORTANCE	PERCENT INCREASE EXPECTED
Strategic planning	48.70	70.10	43.94
Marketing management	48.00	72.10	50.21
Financial management	48.70	60.60	24.44
Accounting	31.60	40.30	27.53
Employee communications	35.50	58.20	63.94
Research & development	27.00	47.00	74.07
Human resources management	14.90	59.10	296.64
Operations management	34.20	62.70	83.33
Information systems management	44.70	57.40	28.41
Training and development	39.50	71.60	81.27
Manufacturing	32.90	53.20	61.70
Customer service and support	54.70	85.10	55.58
Supplier management	23.70	50.70	113.92
Legal functions	2.90	12.70	337.93
Public relations	18.90	32.80	73.54
Social responsibility	22.40	39.70	77.23
Union relations	34.70	65.20	87.90

Functional areas which will receive the highest focus for quality in the future are **training and development**, **manufacturing**, and **supplier management**. Those functional areas which will experience the greatest proportional increase in focus are **employee communications** (266% increase) **public relations** (217% increase) and **social responsibility** (192% increase).

TABLE 7.4

POSITIVE CORRELATIONS OF BUSINESS FUNCTIONS WITH QUALITY FACTORS

DESCRIPTION	F1	F2	F3	F4	F5	F6	F7	F8
Business strategic plan'g	■	■	■	■		■	■	■
Marketing management	■	■	■	■	■	■	■	■
Financial management	■	■	■	■	■	■	■	■
Business accounting	■	■	■	■	■	■	■	■
Employee communications	■	■	■	■	■	■	■	
Research & Development	■	■	■	■	■	■	■	■
Human resources mang'ment	■	■	■	■	■		■	■
Operation management	■	■	■	■	■	■	■	■
Information systems management	■	■		■	■	■	■	■
Training and development	■	■	■	■	■	■	■	■
Manufacturing	■	■	■		■	■	■	
Customer service	■	■	■			■	■	
Supplier management	■	■	■	■	■	■	■	■
Legal functions	■	■	■	■		■	■	■
Public relations	■	■	■	■	■	■	■	
Social responsibility	■	■	■	■	■			■
Union relationship management	■	■	■	■	■	■	■	■
Business strategic plan'g	■	■	■	■	■		■	
Marketing management	■	■	■	■	■		■	■
Financial management	■	■	■	■	■		■	■
Business accounting	■	■	■	■	■		■	■
Employee communications	■		■	■	■	■	■	■
Research & Development	■			■	■		■	
Business accounting	■	■	■	■	■	■		■
Human resources mang'ment	■	■		■	■		■	
Operation management	■		■	■	■			■
Information systems management					■			■
Training and development	■	■		■	■		■	
Manufacturing		■				■	■	■
Customer service						■	■	
Supplier management		■			■		■	■
Legal functions		■		■	■			■
Public relations	■	■	■	■				
Social responsibility	■	■	■	■	■		■	
Union relationship management	■	■	■	■	■		■	

Table 7.4 above, which is a section of Table 7.1, presents a graphic view of the overall correlation of all analysed business functions with the eight Factors of this study. The overall perspective is a significant positive correlation. This implies that companies who perform better on the Factors which make up the dimensions of effective quality management in this study, rate highly in integrating quality principles and practices within diverse business functions. This finding again suggests a broader

view for the implementation of quality management for the companies in this survey who rate more highly in quality management.

Interpretation of findings on "Quality integrated into diverse business functions': While a significant correlation is only demonstrated on seven (7) of 17 typical business functions listed, it appears that more profitable companies demonstrate a more extensive implementation of quality principles and practices in diverse business functions than less profitable firms. **While this does not imply causality, it does support the hypothesis of this research study and suggests that a broader implementation of quality management principles and practices throughout the company may positively affect corporate profitability.** The implication is that companies who manage quality improvement more effectively, tend to include quality principles and practices into a broad spectrum of functional units and, including evidence introduced earlier, tend to overlay business processes across functional entities, and tend to be more profitable.

7.3.2.2 The magnitude of quality improvement sought

Performances in this category are assessed on the basis of answers to questions related to the strategies and techniques required for major improvement efforts. These are summarised as follows, based on the rating of strongly agree on related questions:

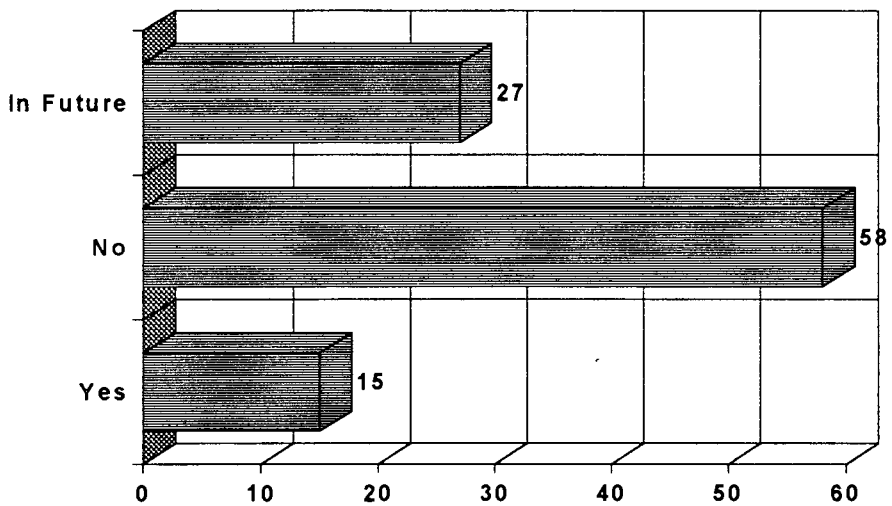
- The use of advanced techniques for major performance improvements
- The use of core process benchmarking against competitors and superior performers
- The application of advanced technology for competitive advantage
- An improvement focus on core processes for improvement efforts
- An outsourcing strategy for key functions

The use of advanced techniques for major performance improvements: This is a paradigm of improvement which companies in South Africa appear only to be entering. Only 15% of responding companies indicate that they are using specialised techniques to achieve "*radical*" or "*breakthrough*" improvements in performance, although 27% indicate that they will be implementing breakthrough strategies in the future. Figure 7.19 indicates that the percentage of companies indicating the use of specific techniques for improvement are small - 12% "*agree strongly*" on the use of process reengineering techniques, four percent (4%) use value engineering and just over 14% apply cycle time analysis and process simplification techniques. The IQS study (1992:28) comments that companies which made frequent use of advanced practices such as process value analysis, process simplification and process cycle time analysis tended to have higher performance than did other companies. The study emphasises that the increased use of process improvement practices can be an important means to competitive advantage, and by implication improved profitability. Clearly this extensive focus is not yet evident in the South African sample studied.

(Figure 7.19 ...)

FIGURE 7.19

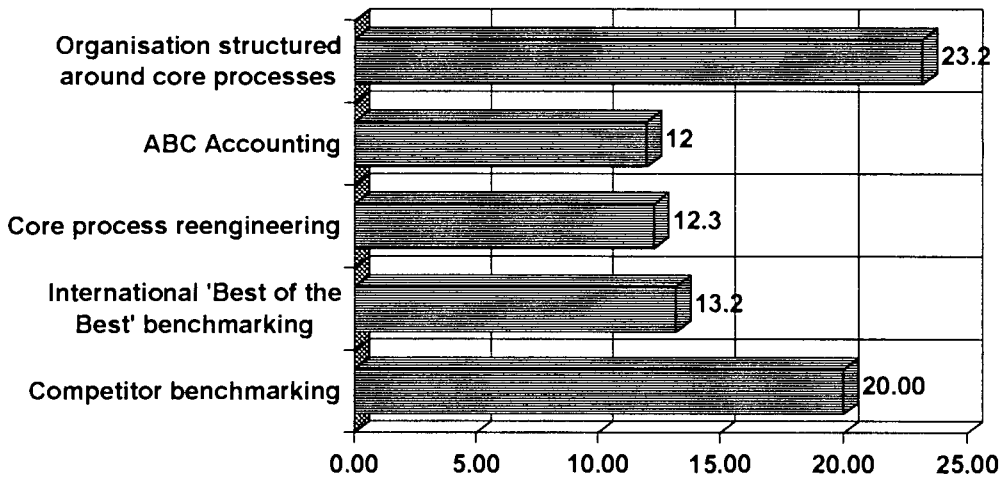
Percentage of companies indicating they are utilising business process reengineering to achieve breakthrough performance improvements ...



While the IQS did not include Activity Based Cost accounting (ABC) in their analysis, the review of the literature does suggest a growing role in corporate process improvement. ABC accounting may not necessarily be considered by some to be a new, advanced methodology for quality and performance improvement. However, as discussed in section 1.1.2, *Business Week* (1991:38) noted that even accounting techniques are beginning to be impacted through quality management. An example given is that of Tektronix Inc. who, as a last resort due to declining profitability, adopted a new and, at that time, unorthodox accounting system called activity based cost (ABC) accounting which produced "*astounding*" results. The combination of company wide quality management underpinned by ABC accounting practices appears to create a powerful, process and activity based improvement capability. In the companies sampled, 12% utilise ABC in combination with quality practices.

FIGURE 7.20

Percentage of companies who strongly agree that use of the following improvement techniques is vital to their future success:



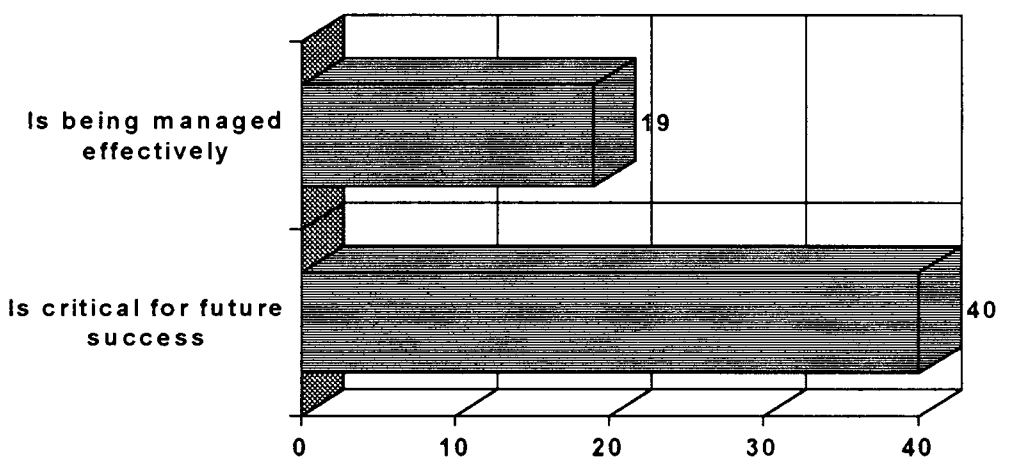
The use of core process benchmarking against competitors and superior performers. The use of benchmarking as part of a major improvement strategy is marginally more widespread than ABC accounting with 13% of companies indicating usage and 20% indicating that benchmarking is a critical input for strategic planning (which implies that there might be some ambiguity about what benchmarking really is). This relatively limited usage is contrasted with the IQS findings (Ernst & Young 1992:24) which indicates that benchmarking as a strategic planning tool shows "*widespread*" usage amongst the top performers. Most of the IQS sample indicate use of benchmarking for delivery and distribution while marketing systems are only rarely benchmarked, and only secondary attention is given to the use of benchmarking as a source of ideas for new products and services.

The application of advanced technology for competitive advantage. While the application of advanced technology for major improvements in competitive advantage

through quality is recognised as critical by 40% of responding companies, only 19% *strongly agree* that their company's use of technology in this area is effective. In addition to this, while companies rank the effective management of technology as one of the three most critical current issues facing top management, technology is not ranked as one of the top three critical issues facing management in the future.

FIGURE 7.21

The percentage of top management who believe that the use of advanced technology for competitive advantage ...



An focus on core processes for improvement efforts. Section 4.3.3 discusses core process management as a vital construct or paradigm for top management in search for major improvement efforts versus a traditional focus on fragmented functions. Given that this is somewhat of a paradigm shift from the traditional organisational structures of the past, it is a surprising result of 23% of companies "*strongly agreeing*" that they have a process-oriented organisational structure. If this is indeed the case, then these companies are better positioned than many other functionally structured companies for significant improvements in performance. This potential is stunted by only 15% similarly agreeing that their quality improvement efforts are focused on cross-functional processes versus purely within functional boundaries.

An outsourcing strategy for key areas: The concept and strategy of outsourcing of certain specialist, typically of non core functions or tasks, is also a fairly recent development, at least as a formal improvement strategy. No companies surveyed *strongly agree* that they utilise outsourcing as a strategy for major improvements. In fact there exists a significant positive correlation between companies who have more formalised quality systems in place (V2) and who have more rigorous process monitoring and control systems in place (F7) to perform most operations internally rather than outsource these. This may suggest that historically quality control is more difficult with an outsourced approach to certain types of work done - in essence an outsourcing strategy creates a greater number of suppliers, and therefore a much greater need for quality control of suppliers. However, when companies do effectively manage the quality of inputs from suppliers effectively (V121) they appear to impact positively on profitability (OPM). The implication is that if a company does not have a rigorous supplier quality management system in place, outsourcing does not appear to be an appropriate strategy, while if these processes are in place and effective outsourcing could impact positively on profitability.

Interpretation of findings on "the magnitude of improvement sought': Despite the findings that a number of companies structure themselves around core processes, only a low 15% appear to apply improvement efforts at these processes. Furthermore, sampled companies appear to perform relatively poorly on the use of advanced improvement techniques. The effective use of technology as a breakthrough strategy also does not appear to be a priority and outsourcing does not feature in their improvement considerations. A relatively low percentage have been able to create the inter organisational synergy required to combine quality and Activity Based Cost (ABC) accounting methodologies. It therefore appears that a focus on less challenging improvement goals rather than the breakthrough improvement goals

discussed in section 4.3.3 may reduce the strength of a correlation with corporate profitability.

7.3.2.3 Quality management as a mechanism for managing organisational change and innovation

Section 4.3.5 focuses in the implementation of quality management not just as a product quality improvement system, but as a company wide mechanism for change and innovation in the organisation. The role of total quality management being applied in business as a methodology for change is noted by Kotler (1992:41) who believes that quality management and continuous improvement are effective processes for organisational change . Among the models he gives for managing change are, amongst others, the Malcolm Baldrige National Quality Award system. The IQS recognises this paradigm shift in the evolution of quality management by defining a model for organisational change which includes improvement methodologies specific to three dimensions of change, namely the pace of change, the degree of change and the breadth of change. This model further segments the improvement methodologies required between the extremes of continuous improvement on the one hand and business reengineering, described in section 4.3.3, on the other, into more discrete and focused methodologies more specific to the nature of change being experienced.

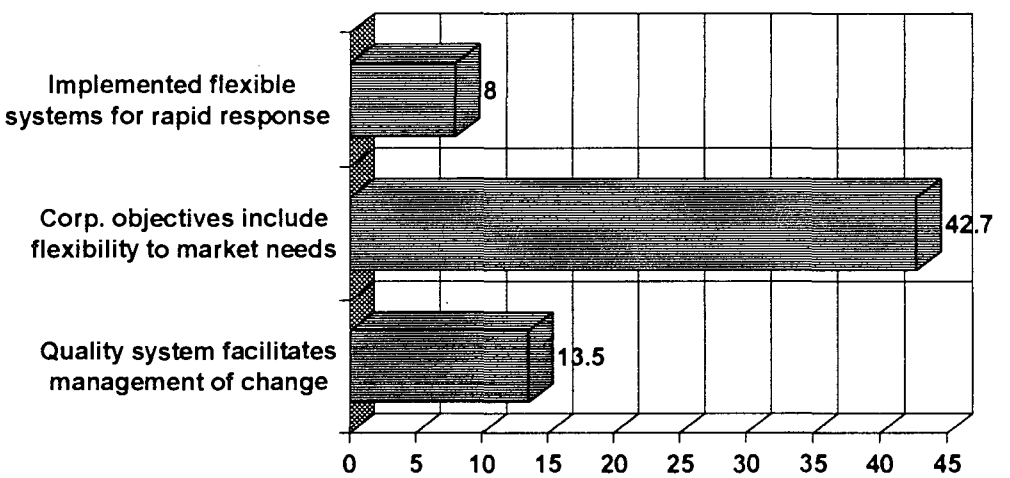
In this study, 13.5% of companies feel that their quality management system has increased their capacity for managing organisational change. Other related items provide some insight into the fact that companies in this study are not yet fully seeing the potential of an expanded scope quality management system as a broad change mechanism. Issues such as empowerment of employees, the use of flexible work teams, the application of advanced improvement methodologies and technologies at grassroots level, as well as at a macro cross-functional level, are all elements of creating a capacity for change. As has been noted, companies in this sample do not

extensively apply these approaches. It is also pertinent to note that, in the investigation into the areas of organisational competence required by companies to achieve competitive superiority both historically and in the future, no surveyed company in this sample identified management of change as one of most important organisational competencies.

(Figure 7.22 ...)

FIGURE 7.22

Percentage of top management who believe strongly about the responsiveness, flexibility and management of change in their companies ...

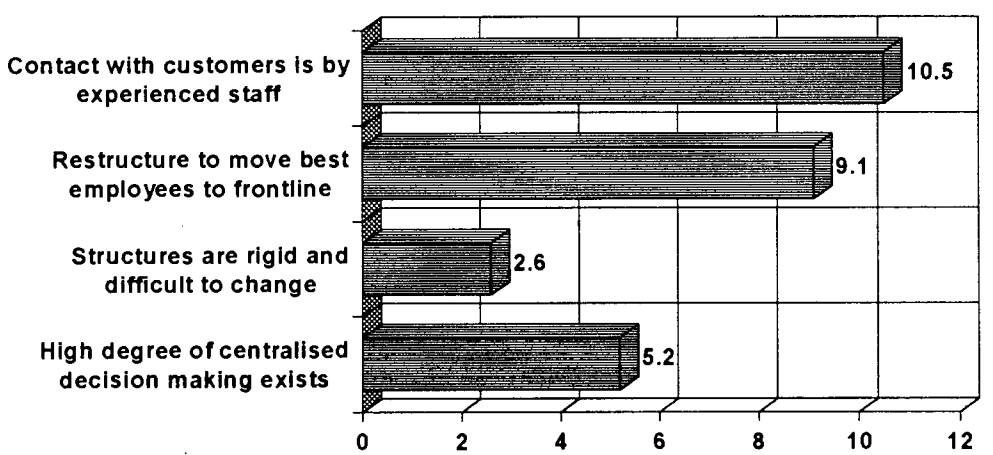


Interpretation of findings on "quality management as a mechanism for managing organisational change": The empirical evidence suggests that sampled companies do not view their quality initiatives more broadly as a potential infrastructure for managing organisational change. Their views of quality management remain somewhat narrow and therefore the potential impact of quality management as a driver of improved organisational change and ultimately profitability is simultaneously reduced.

7.3.2.4 The application of quality improvement efforts to the limitations of traditional organisational structures

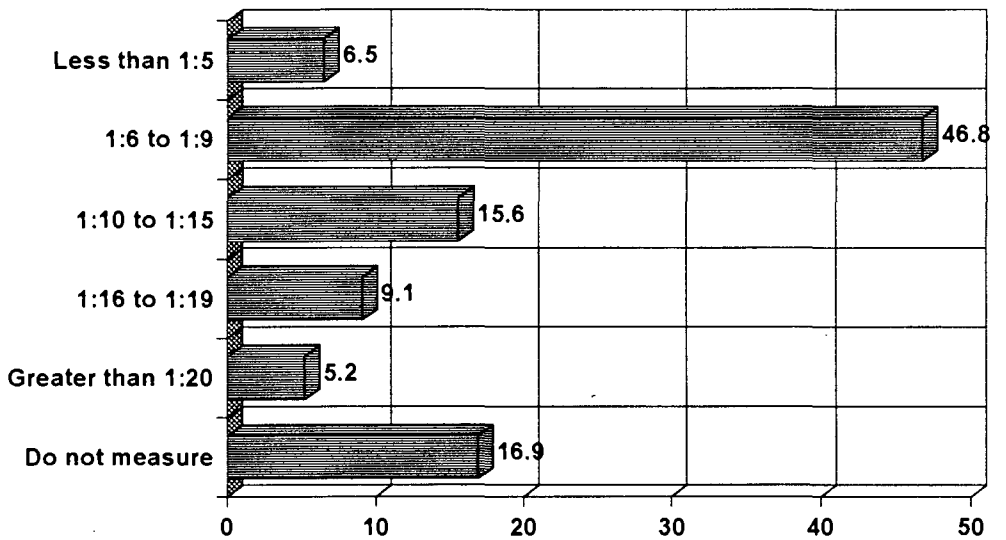
The companies profiled tend not to view themselves as rigidly structured and structurally difficult to change (less than 3% who strongly agree they have rigid structures versus 15% who do not) with a lesser degree of centralised decision-making (5% strongly agree versus 12% who do not).

FIGURE 7.23
Percentage of companies who believe strongly about their organisational structure:



This perception is contradicted by findings related to centralised head office structures. Contrary to the trend noted in section 4.3.10 in which companies are streamlining structurally by, in part, reducing head office structures, the sample in this study includes 13% of responding companies with between 20% and 40% of total staff numbers located in head offices.

FIGURE 7.24
Spans of control in surveyed companies



The concept of outsourcing, while discussed in other areas in this analysis, can also cause significant structural impact on an organisation. Outsourcing, while becoming a key area of focus in other countries is still not a key area for performance improvement in South Africa with over 72% of companies indicating that they tend to perform functions internally as opposed to outsourcing. Only nine percent (9%) of companies indicated a future move towards outsourcing.

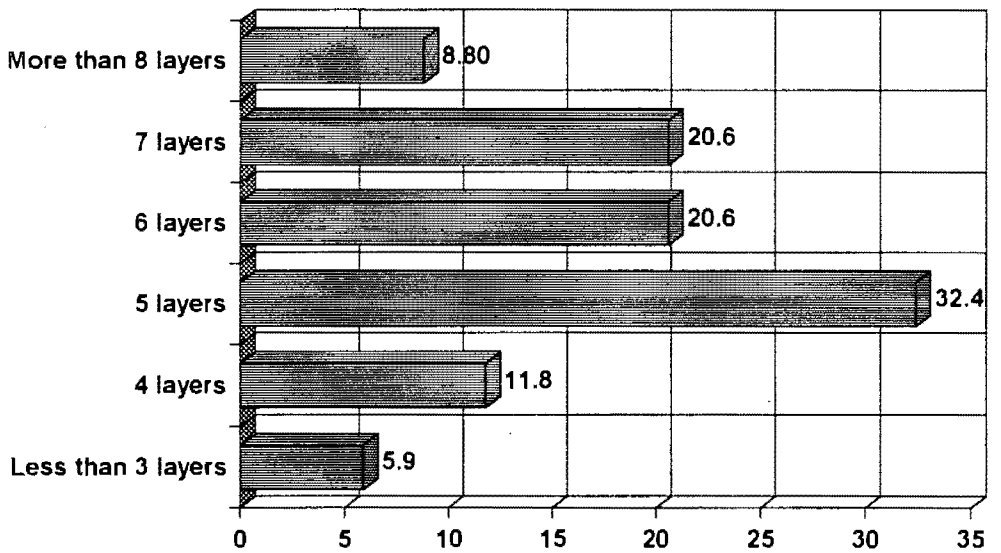
Section 4.3.10 comments on development in other countries in organisational structural changes for enhanced customer focus. In the South African context, while over nine percent (9%) of companies do not foresee structural changes in the future to place higher caliber personnel closer to the customer interface, almost eight percent (8%) do plan on changes in this regard.

Bureaucracy, spans of control and layers of management appears to be an area of concern for companies internationally. The great majority of companies (54%) in this study have spans of control of fewer than 10 employees to one manager (1:10). Layers of management however varies greatly with slightly less than six percent (6%) recording fewer than three, approximately 12% recording four layers, 53% with five or six layers, 21% with seven layers and about 9% recording eight layers of management or greater.

(Figure 7.25 ...)

FIGURE 7.25

Layers of management in surveyed companies



Section 4.3.10 discusses organisational flexibility as largely an organisational structure issue in which the human dimension of teamwork will increasingly play an important role in the future. It has already been noted that companies in this sample do not extensively use flexible teams as an important structural element. Only seven percent (7%) of companies responding use flexible teams extensively.

7.3.3 Other related factors arising from the empirical data:

7.3.3.1 Management style

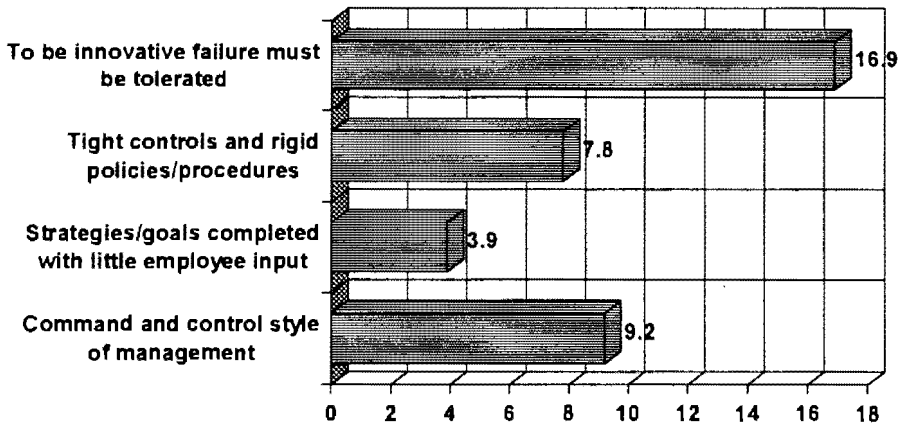
Responding companies are equally divided on their perceptions of management style in their organisations. Nine percent (9%) of companies strongly tend towards a command and control style, while eight percent (8%) do not. Chapter 1 cites the annual *Business Week* quality survey (December 2 1991:18) which notes that the

traditional command and control style of management is not conducive for effective quality improvement. Similarly, four percent (4%) of top managers surveyed believe their companies have tight controls and rigid policies and routines (12% do not believe so). It appears that South African companies lag behind many other leading countries efforts to reduce the burdens of command and control style management, complicated by onerous rules, regulations and policies. Supporting a tendency towards a greater degree of command and control style management are findings in the following section on issues such as the use of flexible work teams and employee empowerment, which tend not to be extensively used in sampled companies.

(Figure 7.26 ...)

FIGURE 7.26

Percentage of top management who believe strongly about the following issues relating to management style:



Interpretation of findings on "management style': Command and control oriented management style in many sampled companies may reduce the effectiveness of quality management and improvement initiatives, and therefore reduce the impact of this factor on corporate profitability.

7.3.3.2 Employee involvement, teamwork and empowerment

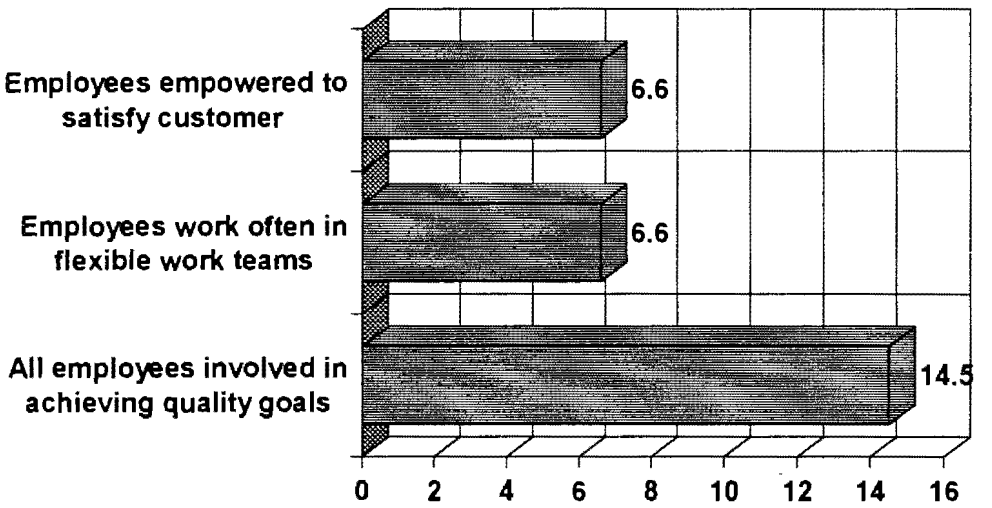
Section 3.4.3 discusses this area of continuous improvement and section 3.4.4 focuses on employee involvement and participation. A finding in this regard is that the principles and practices of employee involvement and empowerment are as fundamental to incremental or continuous improvement as they are to major innovation. In particular the IQS (1992:25) indicates that the "*hallmark*" for higher performers in their international study is the achievement of continuous innovation. The highest performers also benchmark themselves against other companies in of their improvements achieved. Contrary to this international best practice, th

demonstrates a tendency in the companies sampled, for relatively low levels of employee participation in improving quality. Only 14.5% of top managers indicate (strongly agree) that employees tend to be involved in achieving quality improvement goals. A further 20% feel involvement is not applicable in their companies, or they do not know. These percentages are somewhat supported by findings on the use of teamwork, possibly the major mechanism for involvement. Approximately seven percent (7%) indicate that employees tend to work as part of flexible work teams rather than as individuals. The IQS (Ernst & Young 1992:11) indicates that more profitable companies indicate that 25% of employees participate in quality improvement teams. In the sample studied in this research all of the five most profitable companies "*tend to agree*" that teamwork is common while only two of the five least profitable companies rate similarly.

While teamwork is seen to be important to corporate success and profitability (Ernst & Young 1992:11) empowerment of employees to work effectively is clearly an integral aspect of this - teamwork can only be as effective as the degree to which team members are empowered by management to get involved and implement improvements. It is conceivable that teamwork amongst the workforce can be encouraged, but the effectiveness of improvement efforts can be significantly reduced by limiting employee and team empowerment. In this study less than seven percent (7%) of top managers indicate that employees are significantly empowered to make decisions normally outside their scope of authority to satisfy the customer "*on the spot*". This phenomenon is linked to the existence of tight controls and rigid policies within the company, which tend to have a limiting effect on teamwork and empowerment. The IQS (Ernst & Young 1992:23) indicates that the top performing companies "*encourage independence amongst their employees*". The study suggests that widespread use of empowerment for employees who interact with customers shows beneficial impact on performance.

FIGURE 7.27

Top management believe strongly that ...

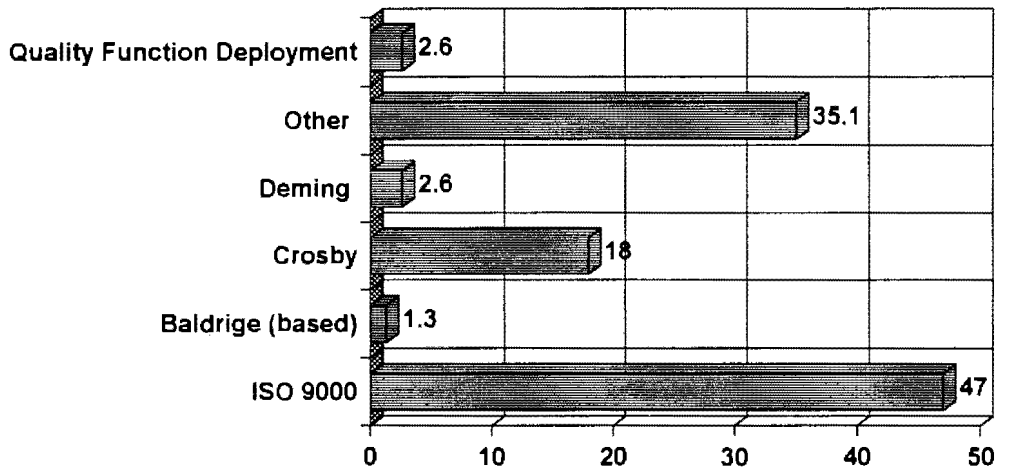


Interpretation of findings on "employee involvement, teamwork and empowerment": Employee involvement in quality improvement teams which are significantly empowered to satisfy customer requirements and implement quality improvements does not appear to be extensively encouraged in sampled companies.

7.3.3.3 A formal versus informal quality system (V2) and the duration of the system (V5)

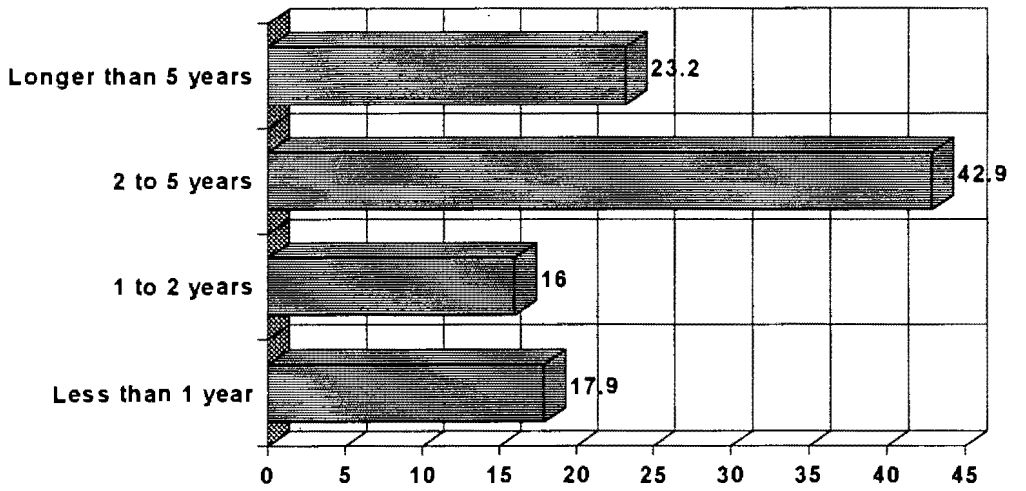
Chapter 2 describes a number of the more visible quality management systems or frameworks based on which companies can design and manage their quality systems. Certain of these systems include comprehensive auditing and accreditation mechanisms for companies whose industries require this objective assessment as part of a supplier management approach, or as a way of mobilising the organisation from

FIGURE 7.28
Formal versus informal quality systems



The secondary hypothesis of this study includes that companies who formalise their quality systems over a period of years demonstrate higher profitability. The relationship of the duration of the quality system (V5) to objective measurements of corporate profitability (NPM) is positively demonstrated in this study. A significant positive correlation is also demonstrated on the assessments of perceived profitability. Assessments of Turnover, Profit as a Percent of Sales and Return on Assets (ROA) all demonstrate significant positive correlations. This implies that when top managers indicate a formal system for quality management in their companies, their assessment of their own relative profitability on certain measures tends to be better than companies with informal quality systems.

FIGURE 7.29
Number of months quality system in operation



Companies with a "*formal*" quality system also demonstrate a significant positive correlation with Factor 2, Leader for Quality, which incorporates quality leadership, planning and goals for quality improvement. This implies that companies with formalised quality system demonstrate various critical leadership characteristics, as well as the use of formalised corporate planning with resultant corporate and tactical goals for quality.

Companies with formalised quality systems also demonstrate a significant positive correlation with Factor 3, A Customer Focus. This implies that when companies indicate a "*formal*" quality system their assessments for focusing on customer-related management practices are significantly better than other companies. In other words, companies with formalised quality systems tend to be significantly more focused on customer related practices than companies with less formalised quality systems.

Further significant positive correlations demonstrated for "formal" quality systems are as follows and imply that when companies indicate a formal versus an informal quality system, they demonstrate significantly higher performance in the following quality

related performance categories, quality management practices and principles (see Table 7.1):

- Turnover (V9)
- Profit as % of sales (V14)
- Return on Assets (V15)
- Process monitoring and control (F7)
- Process cost analysis (V80)
- The practice of performing key functions internally verses outsourcing (V193)
- Inspection techniques (V82)

Interpretation of findings on "a formal versus informal quality system" (V2) and the "duration of the system" (V5):

Companies demonstrating a formal quality system over longer periods appear to become increasingly customer focused, as well as cost efficient, both of which appear to translate into better profitability than companies with informal or very new quality systems.

7.4 Hypothesis testing

The primary and secondary hypotheses will be tested on the basis of the statements of the hypotheses stated in section 5.5, and stated below in null form based on the structure of "*the evolving scope of quality management*" utilised thus far:

The comprehensiveness of the quality system (Factors):

- Factor 1: A results orientation
- Factor 2: Top management leadership, quality planning and goals for quality
- Factor 3: A customer focus
- Factor 4: Employee recruitment, appraisal and remuneration

- Factor 5: Training, communication and internal coordination
- Factor 6: Quality standards in key business processes
- Factor 7: Quality monitoring and control
- Factor 8: Quality improvement techniques

The scope of integration and implementation of the quality system:

- The degree to which the quality system is integrated into diverse business functions
- A formal versus informal quality system, and the duration of each

The primary hypothesis, as stated in section 5.5, but stated below in null form, is as follows:

The financial performance of South African companies is not positively correlated with the evolving scope of quality management practiced in these organisations.

Testing of the null hypothesis, using the structure of *"scope of quality management"* as defined above, is described below:

- **Factor 1: A results orientation**.

  The null hypothesis is accepted for this factor despite the fact exists a significant positive correlations are demonstrated between F1 and six of the relative perceived profitability criteria (V8 to V17 on Table 7.1). While this must be considered an anomalous finding, there is some logical justification as to why this result may exist as discussed previously.

- **Factor 2: Top management leadership, quality planning and goals for quality**.

  This factor does not demonstrate a positive correlation with corporate profitability and therefore the null hypothesis is accepted This is despite the existence of one significant positive correlation with relative perceived sales per employee (V10).

- **Factor 3: A customer focus**.

  While Factor 3 does not demonstrate a positive correlation with objectively measured corporate profitability, there is manifest significant correlation with six (6) different relative profitability ratios as determined by top management and therefore the null hypothesis for this dimension is rejected.

- **Factor 4: Employee recruitment, appraisal and remuneration**

  Factor 4 does not exhibit a positive correlation with objectively measured corporate profitability, but a significant positive correlation does exist with sales per employee (V10). The hypothesis is therefore rejected.

- **Factor 5: Training, communication and internal coordination**

  Factor 5 does exhibit a positive correlation with corporate profitability (Net Profit Margin) and therefore the null hypothesis is rejected.

- **Factor 6: Quality standards in key business processes**

  Factor 6 does demonstrate a positive correlation with corporate profitability (Net Profit Margin) and therefore the null hypothesis is rejected.

- **Factor 7: Quality monitoring and control**

  Factor 7 demonstrates a positive correlation with corporate profitability (Return on Assets) and therefore the null hypothesis is rejected.

- **Factor 8: Quality improvement techniques**

  Factor 8 does not demonstrate a positive correlation with objectively measured corporate profitability, but does show this correlation with relative perceived market share and operating cost per employee. For these reasons the null hypothesis is rejected.

The scope of integration and implementation of the quality system:

- The degree to which the quality system is integrated into diverse business functions.

  Considering the global view shown by Table 7.1 which demonstrates that there exists a significant positive correlation between the Factors defining quality management for this study (F1 to F8) and the implementation of quality principles and practices within the broad range of functions listed (V105 to V125) implies that the null hypothesis is to be rejected. Companies who have a more extensive and rigorous quality management system in place manifest a significant tendency to integrate quality principles and practices within diverse functional entities within their organisations. Simultaneously there is a tendency for these companies to be more profitable as measured by OPM, NPM and ROA.

- A formal versus informal quality system, and the duration of each.

  Table 7.1 indicates that companies which have implemented a formal versus an informal quality system (V2) manifest a significant positive correlation with perceived relative turnover (V9) perceived relative profitability as well as percentage of sales (V14). Moreover, a significant positive correlation exists between the duration of the formal quality programme (V5) and corporate

profitability measured by Net Profit Margin (NPM). Based on this result the null hypothesis is rejected.

7.4.1 Overall statement on hypotheses testing and formulation of new hypothesis

On balance the hypothesis, as stated in null form, is rejected and the following hypothesis formulated:

The financial performance of South African companies is positively correlated with the evolving scope of quality management practiced in the organisations included in this research study.

7.5 Conclusions

The empirical data in this study suggest that, in broad terms, a broader scope of application and practice of formal quality management and related management practices is positively related to superior organisational profitability. The IQS study is in support of this finding by indicating that their study demonstrates that as companies broaden their focus with a developing sophistication of application of quality management practices and techniques, so these companies progress from lower performers to higher performers in terms of profitability.

7.5.1 A summary profile of more successful quality practices based on the research findings

- More profitable companies have developed a rigorous and extensive quality system, which has been enhanced and upgraded over a period of longer than five years.

- This quality system is integrated into a wide range of key functional entities throughout the company. In particular entities such as finance and accounting, research and development, operations management, supplier management related functions, public relations and social responsibility are fully involved in the organisational quality strategy and management process.

- The companies are process and customer focused versus a single minded results focus, are not only effective in the more traditional aspects of quality management of developing and adhering to rigid quality standards and monitoring performance against these standards, but also focus on the effective coordination of these quality related activities throughout the entire company.

- These companies also perform well in the "*softer*" areas of quality competence, namely employee communications and training.

- More successful companies structure themselves along core process lines and focus these processes on the customer.

- Successful companies have achieved a higher degree of structural flexibility and are able to respond more rapidly to changes in the marketplace.

- Companies with successful quality systems with a high degree of customer focus have less centralised decision-making processes.

- Companies demonstrating a strong customer focus in their quality systems also demonstrate a tendency towards minimal layers of management between the customer interface and top levels on management, with three layers appearing as the most common.

7.5.2 A summary profile of less successfully implemented quality practices based on the research findings

- Certain companies may focus on short-term results for quality improvement at the expense of establishing a strong system and infrastructure for managing quality, change and innovation on a permanent basis.

- There exists a low focus on providing lower level employees with specific goals for quality improvement and thereafter linking remuneration and reward to performance in this area.

- Lower level employees, particularly those in frontline positions, tend to be poorly empowered to provide superior customer service "*on the spot*".

- Top management of certain companies indicate inadequate focus on the development of flexibility of systems and processes in order to be responsive to changing market needs.

- Coordination of quality systems and improvement efforts appear to be generally poor. This lack of cooperation and synergy is worst at lower the levels of the organisations.

- The empowerment and use of teams to solve their own quality problems and to be innovative does not appear to be an overall corporate strength in companies studied.

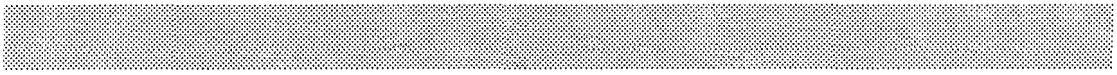
- The incorporation of customer needs and the setting of customer quality standards is poorly incorporated into processes further down the value chain, in particular in the maintenance and service of products for the customer.

- There tends to be a low level of recognition for the need for radical change and innovation amongst companies as a whole, particularly in the use of techniques and methods designed for major innovation.

- There tends to be a low recognition for the opportunities provided by technology as a mechanism for significant innovation and competitive advantage.

- Quality management as a process is not generally viewed as a mechanism in itself for managing change in broad terms.

- While companies generally indicate flexibility of systems as a corporate objective, they rate their achievement of flexible systems and processes relatively poorly.



CHAPTER 8

RECOMMENDATIONS AND CONCLUSIONS

CONTENTS

8.1 Introduction

Chapter 7 analysed the empirical data and provided macro and micro interpretations of these data. Chapter 8 provides specific recommendations and conclusions based on the previous analysis, particularly in light of the IQS benchmark findings where appropriate, as well as other secondary research.

Up to this stage the research report has been structured around the dimensions initially described in the statement of the problem in section 5.4. This chapter, based on the previous analysis, structures the recommendations around a proposed model for an evolved scope of quality management and innovation.

8.2 The need for a new paradigm of strategic innovation and change which goes "beyond quality" management

Section 7.3 suggests that companies who rate themselves highly on the elements of quality (F1 to F8) in fact tend to perform significantly better on certain objectively measured profitability criteria than companies who rate themselves less well. While this positive relationship provides certain dimensions for an appropriate model for managing quality for poorer performers, there exists a range of concerns or shortcomings which have been identified in section 7.5.2. The analysis of the data has suggested that while certain companies perform well on various criteria, and while there are positive links to profitability, significant concerns exist, particularly when compared to the IQS results - increasingly in the future South African companies will not just be comparing themselves to international competitors, but competing against them.

It is proposed that a new paradigm and model for innovation and change be developed, and that companies evaluate themselves, and their strategies for innovation and change, on the basis of this new model. This changing paradigm, introduced in Chapter 1 as the need to move beyond traditional quality management, breaks the current paradigm of organisational improvement. This suggests that the processes of strategic planning, quality management and reengineering, and approaches to structural redesign be redeveloped to create an aggregated process of organisational innovation and change. The importance of this has been described previously and relates in part to noted concerns by various specialists and organisations who believe, for example, that strategic planning and quality planning are seldom integrated, that continuous improvement and process reengineering are often described as two separate and discrete change initiatives, that techniques such as ABC accounting and benchmarking are parochial and fragmented and that frequently only certain units in organisations are involved in any form of improvement effort. It is suggested that a more integrated model and approach is required. The mix of improvement strategies and management practices must operate within an overall model of change and innovation. This integrated model is presented in Diagram 8.1 and the remainder of

this chapter will describe this proposed model as the foundation for discussing the recommendations resulting from this study.

FIGURE 8.1

A PROPOSED MODEL FOR STRATEGIC INNOVATION AND CHANGE

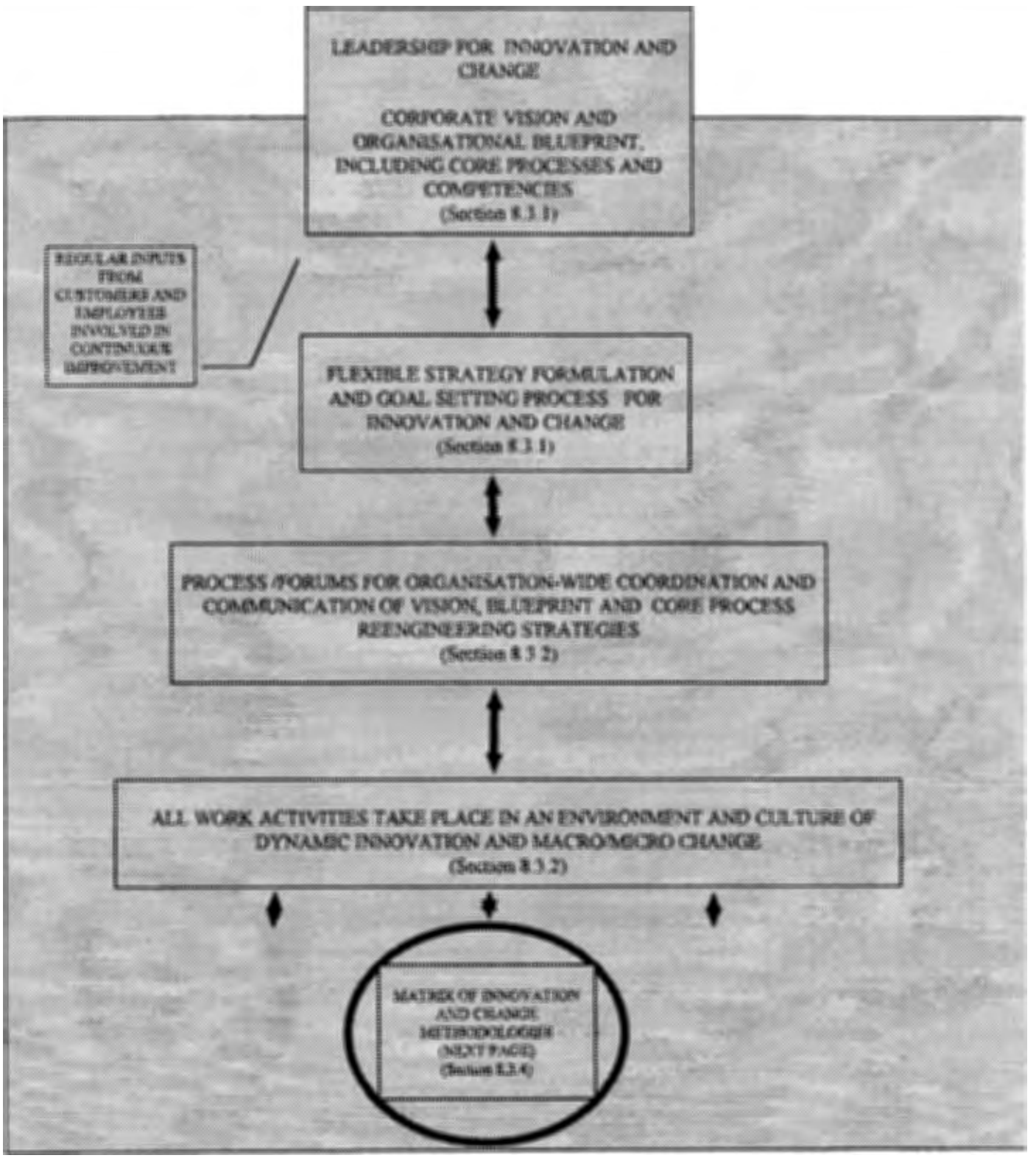


FIGURE 8.1 (Continued)

DESCRIPTION OF SCENARIOS REQUIRING CHANGE AND INNOVATION

COMPLEXITY OF CHANGE	PACE OF CHANGE: GRADUAL	PACE OF CHANGE: RAPID
SIMPLE	**QUADRANT 1** • Generally stable economic, political, social, legislative scenarios • Industry/business is relatively simple (e.g. use of technology is limited) • Competitive environment is generally slow • Markets served tend to be homogeneous • Customer needs tend to be simple and stable	**QUADRANT 2** Scenarios faced are generally the same as Quadrant 1 except that change takes place at a more rapid pace
COMPLEX	**QUADRANT 3** Scenarios faced are generally the same as Quadrant 4 except that change takes at a slower pace	**QUADRANT 4** • Economic, political, social, legislative scenarios are complex and rapidly changing • Industry and business type is complex and dynamic • Competitive environment is intense and dynamic • Markets are diverse • Customer needs are sophisticated and dynamic

FIGURE 8.1 (Continued)

APPROACH REQUIRED FOR INNOVATION AND CHANGE

PACE OF CHANGE

COMPLEXITY OF CHANGE	GRADUAL	RAPID
SIMPLE	QUADRANT 1 • Goals for improvement are moderate • Leadership role is important at start • Incremental innovation within vision • Management role is coach, facilitator • Need for customer focus is great • Remuneration linked to incremental innovation for all employees • Communication of vision and employee success in incremental innovation • Employees operate as natural work teams • Performance measurement of employee efforts • Techniques required are simple • Role of technology is minimal • Structure focused on functional processes	QUADRANT 2 • Techniques in this scenario begin to require a combination of Quadrants 1 & 4
COMPLEX	QUADRANT 3 • Techniques applied and roles required are similar to Quadrant 4, except that the urgency for change is less and therefore the opportunities for planning are greater and risks are less	QUADRANT 4 • Goals for improvement are massive • Leadership role is strong, totally involved, great need for vision and blueprint • Management role is to prepare staff for change, communication of vision , support and coach • Need for customer focus is great • Remuneration linked to direction of change and results based incentives most important at top management level • Need for extensive communication and coordination • Specialised team skills in process innovation required • Sophisticated techniques required for organisation performance measurement • Role of technology is critical • Structure based on core processes

PERFORMANCE MEASUREMENT

The IQS provides a model (1992:40) which structures the methodologies for change based on two dimensions of change, namely the **pace** and **degree** of change, and provides a useful foundation and benchmark for this study.

It is important to note that the dimensions of change shown in Diagram 8.1 and the different approaches described in each quadrant, imply that different companies facing different degrees and complexities of change will respond in different ways. Indeed, single company may find at different times, or even simultaneously in different units, that their responses will be different depending on the complexity and pace of change. In many cases a large diverse company will be involved to some degree in all Quadrants at any one time. While there is an overall worldwide trend in business environments generally towards increasingly complex and rapid change, each companies situation will be specific and unique and their response must be correspondingly unique. The model provides a broad guideline and structure on which to base this unique approach.

8.3 Description of the proposed model for the strategic management of innovation and change.

Figure 8.1 provides a proposed model resulting from the findings of this study. The remainder of this chapter describes this model in contrast to the apparent approaches adopted by the sample of companies in this study.

8.3.1 A corporate vision and future organisational blueprint

While the purpose of this study is not to describe changes in the nature and role of strategic planning, it has been noted previously, especially when discussing concepts and practices of reengineering and core process redesign, that radical change requires a flexible vision within which innovation and change can take place. This vision needs to be specific to the competitive environment in which the company is operating and should provide a description of the degree of change required in the organisation to

achieve its future vision. Typically this vision would refer, for example, to the company striving to be the best or close to the best in the markets they serve and the direction the business will take in the future in terms of products and markets. This vision would give some indication as to the degree and pace of change required to achieve this competitive position. The vision is also important to begin to mould the mindsets of employees and ultimately the organisational culture to one which deals with change and innovation as an opportunity to achieve competitive advantage rather than a threat to be avoided.

The role of an organisational blueprint is to move beyond the rigid strategic planning processes of the past to a flexible and dynamic "picture" of what the organisation should become in the future. This picture will change in accordance with the changing external environment, and may never be fully documented as were the more rigid strategic plans of the past. The blueprint may in the extreme be a mental picture which is created by the ongoing discussions and workshops of management and employees across the organisation, and may be moulded to suite the specific needs of certain units or geographic areas of the organisation which serve different and unique markets. Essentially the blueprint provides strategic focus which empowers employees to be innovative and to change their parochial work processes in line with the broad blueprint of the organisation. Empowerment for innovative improvement across an organisation cannot effectively take place without a vision and blueprint of this nature.

8.3.2 A process of coordination and communication of the strategic vision and blueprint to guide change and innovation

As the pace and complexity of change escalates, so the ability of top management, who are typically centralised and distant from the market interface, to formulate company-wide responses to change is reduced. Rapid and complex change often requires different responses in different areas of the organisation depending on the uniqueness of the competitive environment. It becomes increasingly difficult to determine the appropriate response required as markets diversify, products proliferate and competition intensifies. This is a situation being experienced by many companies

in South Africa as this country becomes a global player. This implies that the ability to respond to change must be developed across the organisation, at all levels of employees. Top management's role then becomes one of creating and communicating the flexible blueprint for change and providing the tools, techniques and coordination required for successful innovation and change to take place. The IQS noted the tendency for top performing companies in their sample to extensively communicate the strategies and goals of their organisations to all employees. This study has also identified the significant correlation between effective communication, coordination and organisational profitability.

The evidence emerging from this research tends towards a fragmented approach to quality improvement in the sample studied. This profile includes different entities performing certain improvement tasks in their own way, using their own "flavour of the month" methods towards a goal that is unclear (this is overstated for purpose of describing the scenario). It could be argued in this scenario that a centralisation of all improvement functions is necessary to gain synergy and strategic focus. Clearly, as has been discussed previously, there are forces against centralisation and towards empowered decentralisation. Between these two opposite forces is firstly the need for a corporate vision and a blueprint for strategic focus. Secondly a mechanism for coordination and standardisation of methodologies and the prioritisation of improvement effort must be devised. Section 4.3.3 discusses the concept of core process management, and it proposed that it is with this concept of strategic vision and coordination that these opposite forces are managed. Change management and innovation (moving "beyond quality") must be considered a core process in itself (and therefore itself should be a target for continuous improvement). This caters for varying degrees of centralisation and decentralisation depending on the nature of the company. A core process owner, typically located centrally, is responsible for the overall performance of the core process in terms of cost, efficiency and effectiveness. This role also takes its direction from the vision and blueprint but must also remain extremely aware of the supporting processes (say systems development or certain human resource functions which are often centralised) and the need to reengineer these in response to the requirements of frontline entities and customer needs.

8.3.3 A culture and environment of dynamic change and innovation

Figure 8.1 suggests a breakpoint at this stage in the model from functions which are generally centralised with top management responsibilities above, and more decentralised below. It was noted in section 4.3.6 that Beer et al (1990:159) believe that traditional quality management programmes are inappropriate for the 1990's is that, like most change methodologies they are guided by a theory of change that is *"fundamentally flawed"*. Because most change programmes fail in developing the *"soft"* human procedures required in major organisational change without changing the structured environment within which people work at grassroots level. Beer et al found in their research that organisational change is typically initiated at the "bottom" of the organisation, through informal efforts to solve day-to-day business problems. Change is not successfully initiated with the issuing of new corporate policy statements and the "vision thing", the authors suggest, but at the periphery of the organisation:

> *The common belief is that the place to begin is with the knowledge and attitudes of individuals. Changes in attitudes, the theory goes, leads to changes in individual behaviour. And changes in individual behaviour, repeated by many people, will result in organisational change. According to this model, change is like a conversion experience. Once people "get religion," changes in their behaviour will surely follow .*
>
> *This theory gets the change process exactly backward. In fact, individual behaviour is powerfully shaped by the organisational roles that people play. The most effective way to change behaviour, therefore is to put people into a new organisational context, which imposes new roles, responsibilities, and relationships on them* (Beer et al 1990:160).

This quote gets to heart of the need for the core process for change and innovation being proposed in this study to take place in a culture which is supportive of change.

Clearly many large traditional organisations tend to be somewhat bureaucratic and do not create an environment of change and innovation. Beer et al present a case that the

system itself - the new processes, procedures, roles and responsibilities for all employees - is most critical in order to begin to create this culture, not the reverse.

8.3.4 A matrix system for change and innovation

The matrix presented in Figure 8.1 is based on the model presented by the IQS and provides a sound benchmark for this section of the model presented in this study. Each Quadrant of the matrix will be discussed with relevance to differing organisational profiles and circumstances.

The quadrants are divided on the basis of three dimensions: the pace or speed of change, the complexity of change and the scope of change.

8.3.4.1 The pace of change

This dimension recognises the speed at which change being is being experienced and the required response to this change by the company. Change may be rapid or gradual and the response of the company must consider this dimension. An example of this using a likely South African context may be the opening up of new international markets with the need to rapidly respond with new products, systems and delivery channels. Speed of response can often be the definitive success factor. On the other hand gradual change may be minor computer system changes requiring minor adjustments to processes and procedures. Change which is gradual obviously permits organisational learning and adaptation to occur in a more sequential and sedate manner. Rapid change ushers in a dimension of urgency, and possibly chaos, which adds further complexity to the organisational situation and demands on management.

8.3.4.2 The complexity of change

This dimension deals with the degree of complexity involved in the change being faced and the degree of organisational intellect and learning which must be mobilised to manage the change. An example of complex change is that of major computer systems changes (in a financial institution for example) which affect the very essence of the business. Risks and costs are great and the overall impact on the business for success or failure is of survival proportions. Simple change could be minor changes in customer or market needs requiring minor process or procedural adjustments by the company.

8.3.4.3 The scope of change

This deals with that element included in the title of this research, namely the degree to which the change affects the entire organisation, thus requiring an organisation-wide response, or whether it affects only a segment of the business, thus only requiring a narrower and more focused response.

Obviously these three dimensions can all interlink, for example a company can experience complex rapid change which only affects one aspect of the business, or the change can be gradual and relatively simple, while affecting the entire organisation, and so on with the other segments. This portion of the model provides a basic framework for an organisation to determine the nature of change and the appropriate category of response required.

8.3.5 The system of change and innovation, withdiffering methodologies dependent on the nature of change

This section proposes a broad system of innovation and change including a variety of management practices, principles and methodologies appropriate to the nature of change being experienced. These are structured around the major factors identified in

the formal statement of the problem for this study in section 5.4 and thereafter used as the framework of analysis through Chapter 7. In the descriptions that follow only the two extremes in the matrix will be described (quadrants one and four) since quadrants two and three assume intermediate degrees of each of the extremes. Also in this description, the dimension of the scope of change will be discussed within the other two primary quadrants which are subdivided by pace and complexity of change.

It must also be recognised that in a typical large organisation the principles, procedures and techniques described in the various quadrants are seldom, if ever, applied in isolation. A diverse company will invariably be involved in each quadrant to some degree at any point in time.

8.3.5.1 Quadrant 1: Gradual/Simple change requiring a continuous improvement approach

The scope of application and involvement in this quadrant should be organisation-wide and ongoing. All employees should, by the fact that they have been employed to perform certain work tasks and activities, also be required, trained and empowered to be continuously involved in activities to improve on the manner in which these tasks are performed. This is at the heart of continuous improvement at a micro level. The following descriptions relate to those elements of change and innovation required to support and stimulate continuous improvement.

A results orientation and the magnitude of the goals for improvement (extended Factor 1): While employees and top management are geared in this scenario for small incremental improvements being achieved by all individuals, teams and units throughout the company, the objective here is for massive improvement to result from the cumulative effect of small improvements being made across the organisation. However major changes to typically centrally controlled processes, like corporate wide technologies, are not achieved in this approach to change and innovation.

The role of leadership and management (extended Factor 2): The need for strong visible leadership in this scenario of change and innovation is minimal, except during

implementation of an initiative of this type. It is certainly important for employees to clearly understand the vision for the organisation and the long term blueprint so that micro improvements are within a strategic context, but the nature of change is such that it is unlikely to cause significant deviations from the blueprint as a result of any single improvement. Top management's role is one of promoting a culture of continuous improvement as "*the way we do things around here*" and communicating the direction, focus and goals for improvement, for example improving customer service and reducing cost.

Line management's role becomes increasingly one of coaching and empowering employees and providing an environment in which to continuously improve, rather than an environment where management "*know all*" and in which improvement emerges from the directives passed down by management.

Customer focus (Factor 3): This orientation for change and innovation, both micro and macro, appears based on the literature (but not on the empirical data) to be vital in order to maximise profitability. Despite the result in this study which was unable to demonstrate a significant correlation between a customer focus and profitability, international evidence is convincing that this should be a primary focus of attention. This is particularly important in those structures of an organisation which do not directly deal with customers. In these structures the concept of providing value to internal customers can dramatically redirect, focus and give added meaning to the work being done. This focus is particularly important in support of core process reengineering since the value created by functional entities can often be best measured by those who use the outputs from these internal entities - it is obvious but important to note that at the frontline of all companies this measure of the value perceived by customers is typically evident to all employees as the very essence of their business, while for many structures behind the frontline the concept of "*value to customers*" can be entirely lacking. This approach of focusing on internal customers restores this focus. For an organisation to truly create and cultivate a customer focus which realises measurable benefit to the company, certain key processes and practices must change along with organisational culture. Among the most important of these are the

goals and measurement criteria for the company which drive top management efforts, along with a core process structure which focuses on value to the customer.

Employee appraisal, remuneration and empowerment (extended Factor 4): For most companies, particularly in the early stages of continuous improvement, the requirements of continuous innovation and change are very demanding and even stressful. All employees, even at management level, must identify "*what's in it for me*". A critical success factor for continuous improvement is linking improvement achieved by, management of, and participation in, the improvement process. This link between change and innovation and remuneration must start at top management level and ultimately include all employees.

The essence of changes to appraisal and remuneration lies in the need to empower employees to take substantial responsibility for the quality of the work they perform. As empowerment is achieved (through skills, culture changes, management style, support) so the new role employees play and the greater effort they apply must be recognised and rewarded. It is recommended in this Quadrant that companies reevaluate their appraisal and remuneration systems inline with the requirements of continuous improvement. Evidence from the literature, supported by the empirical evidence, suggests that continuous improvement strategies will fail without this dimension included in the approach to innovation and change.

Training, communication and coordination (Factor 5): A cornerstone of continuous improvement is skills training in the various techniques required. Skills listed by Harrington (1991) are:

- Flowcharting of work processes
- Process cycle time analysis
- Process value analysis
- Process cycle time analysis
- Cost reduction techniques
- Process performance measurement
- Problem analysis

Employees cannot be expected to be experts in these areas of work analysis, but is proposed that a basic understanding of these skills is essential. The philosophy is that all employees are not simply employed to do a job of work, but are also expected to improve their work processes on a continuous basis.

Effective communication demonstrated a significant correlation with profitability in this study, and this was confirmed by the IQS. If employees are empowered through the training of new skills, a supportive management style and a vision and future blueprint, regular communication on these issues and progress towards goals is essential. The IQS notes that communication of the strategic direction of the company to middle management appears to be most important in mobilising improvement efforts which result in improvements to corporate profitability.

Continuous improvement by definition creates change throughout the organisation. In many cases these improvements will have cross-functional impact on other interdependent entities. It will be found necessary to develop forums and structures to coordinate and prioritise the improvement efforts. This is highly beneficial since many bureaucratic and highly structured organisations often suffer from structural barriers, parochial attitudes and "*finger pointing*" between entities. The work process orientation and customer focused nature of continuous improvement can greatly alleviate barriers between work which flows between entities. It is essential that companies establish a cross-functional, process oriented and customer focused system for the analysis of work in order to improve coordination between entities.

Quality standards in key business processes (Factor 6): Recommendations in this area relate to the need to achieve a balance between providing minimum standards or guidelines for employees to benchmark themselves against, with the risk of destroying innovation by presenting standards as rigid performance goals required designed by top management. This risk is often enhanced by the publication by organisations of onerous documentation of procedures and standards. Associated with poorly skilled and unempowered employees, documentation and standards can become the "*cow path*" referred to by Hammer (1990:104). Employees blindly and unthinkingly follow

what has been done in the past and what is documented because they feel unable to question the documented methods and standards. Standards should rather be presented as minimum guidelines which employees should be challenged and expected to improve on. Indeed, employees should ultimately design new and improved standards of work performance based on customer requirements. Once employees achieve this state, they own the standard rather than have a sense of standards being imposed and policed from head office.

Performance monitoring and control (Factor 7): It should be remembered that the concept of gradual/simple change does not imply poor quality or inadequate levels of sophistication. The model for gradual/simple change implies that the need for sophisticated techniques, including those for performance monitoring are relatively low at the level of the individual versus the specialised reengineering or process innovation approach described in the Quadrant 4 scenario. At a corporate level the expectation is that improvements are aggregated to create change which meet the minimal needs of the company, but this will still require the need to monitor and control that quality improvement is meeting standards set. It should be remembered, as has been noted that most companies in a competitive industry will simultaneously be responding to different categories of change in different areas of the company. The need here places focus on each individual and team to have a basic level of competence to monitor and report on the key performance aspects of their own work processes. While the skill levels of the individual will typically be low, this can be greatly enhanced at a organisational level through technology. Networked computer systems should ultimately be investigated and implemented (if the scope of the organisation justifies it) which allow individuals and teams to electronically monitor the work they perform where possible and capture performance against standards where possible. This performance can then be automatically aggregated into an organisation-wide scorecard of continuous improvement.

Electronic or manual monitoring and control in this category of change can, however be counter productive if it is implemented out of context of the entire model described in this quadrant. This kind of monitoring is not simply to allow top management to police the work of employees on the ground. It is based on the concept of empowered

employees who require tools to perform at their best. Top management's role in this regard is monitoring total performance against objectives, but any move to use monitoring systems in a punitive fashion will result in the system being abused by employees.

Monitoring and control in this category, as mentioned, does not imply and should not require high levels technical expertise from workers. Technology can in fact remove much of the need for high levels of technical knowledge. To simplify this process, performance monitoring can be grouped into a smaller number of key performance areas, such as customer satisfaction, process costs, and process cycle time. This not only provides simplicity and focus for employees but allows organisation-wide aggregation of performance monitoring by top management.

The application of tools and techniques for process improvement (Factor 8): Continuous improvement does not attempt radical improvement and therefore the sophistication required in the application of tools and techniques used by employees is lower than in other quadrants. This does not suggest that the tools and techniques (or technologies) applied are necessarily less sophisticated, only that the processes they are used on are simpler and the improvement targets lower that in other quadrants. As is evident from both Hammer and Champy (1993) and Harrington (1991) that many companies can be overwhelmed by the perception that change is often so complex that it almost always requires so-called "*gurus*" to assist the company. But this is not necessarily the case according to Hammer and Champy (1993:109). Most often the skills are inherent in the company or can be learned very rapidly. The description of Factor 5 for Quadrant 1 (above) describes examples of skills training required for a range of tools and techniques.

The role of technology: Gulden and Reck (1991:10) quoted in section 4.3.3, comment that the application of technology is a key area of difference between continuous improvement and reengineering. This was clarified in this study by suggesting that the technology required to achieve improvements to the micro work processes, which are the primarily the focus of continuous improvement, may indeed require technology only as an incidental dimension, but as noted in the previous

section on monitoring and control, highly sophisticated technology is vital in certain circumstances to support the continuous improvement system as a whole and to limit the need for high levels of skill by employees and to limit the burden on them. In summary, the need for sophisticated technology in Quadrant 1 and Quadrant 4 are the same in broad terms as proposed in this model - it is the purpose to which it is applied which is different. In Quadrant 4 technology is integral to formulating the solution to the macro business process, in Quadrant 1 technology is used primarily as part of the supporting system infrastructure for continuous improvement.

Organisational structure and core processes: The nature of organisational structure and its impact on a continuous improvement initiative was discussed in section 4.3.10. Without duplicating this section, typically large organisational structures, with related aspects of organisational culture, centralised management decision making, bureaucracy and red tape, barriers between functional units and parochial attitudes, can have a devastating effect on continuous improvement efforts. Performance improvement in Quadrant 1 is heavily reliant on employee empowerment and initiative and traditional structures restrict and hinder these efforts. The emerging organisational model for continuous improvement is not documented in traditional organochart form, which is largely a diagram of functional structures and hierarchy, but rather on a process map in which value adding work, focused on customer value at the lowest possible cost, is the key focus. Within this map, people, technology, other resources and operating costs, and budgets can be documented.

It is proposed in this model for Quadrant 1 that the tendency be for the following trend in structural redesign to support continuous improvement:

- Fewer layers of management (fewer than 4 appears from this research to be a guideline).

- Wider spans of control, with concomitant empowerment of employees through intensive skills training in continuous improvement and basic process analysis skills.

- A primary focus on business processes versus functional organisational structures.

- An orientation to flexible work teams responsible for entire processes from customer needs to customer satisfaction versus functionally bound employees with narrow tasks working in isolation.

- Organisational structures as described above cannot operate without significant cultural change. For example, issues involving hierarchy and status amongst management in particular must be altered. Management style must migrate from command and control to coaching, facilitative and project management, as just one example of a culture change required in Quadrant 1.

8.3.5.2 Quadrant 4: Rapid and complex change requiring a core process reengineering approach

The nature of change in this scenario is rapid and complex, and the issues facing top management as a result of the pressures of change are of major proportions. However the scope of impact may not necessarily directly involve or affect the entire organisation. Continuous improvement efforts are not capable of dealing with issues of this complexity, urgency and technical complexity. In many situations continuous improvement efforts across the organisation will have identified limitations in the performance of certain core processes (see section 4.3.3 for examples of core processes) but will have been unable to make substantial gains because the problems are beyond their scope of control. The continuous improvement system described in Quadrant 1 must include formal feedback systems to ensure that specialists are advised of core process problems as they are experienced at the customer interface in particular. This implies the need for an intimate and formal coordination system and forum between continuous improvement and reengineering systems for change and innovation as described in section 8.3.3.

A results orientation and the magnitude of the goals for improvement (extended Factor 1): Section 4.3.3 reviews the views put forward by Gulden and Reck (1991:7)

who describe the impact of reengineering as fundamentally redesigning a select number of core business processes, changing and creating new jobs and job skills, changing and developing new management systems and reorienting the organisation around new values and beliefs.

The goals and rationale for improvement based on the scenario in Quadrant 4 are entirely different from Quadrant 1. Clearly the most fundamental differences are the urgency for improvement, the magnitude of improvement, and the complexity of change and innovation required. It has been noted in this study that the companies sampled did not express a strong sense of the need for massive improvements in performance despite the substantial changes being experienced by this country and the rapidly intensifying competitive environment. The recommendations proposed here are that companies develop the capacity and techniques for assessing the need for improvements in their companies (it should be noted again that companies, for example, did not demonstrate a capability or need for benchmarking themselves against the best performers worldwide) as well as the skills necessary to manage change on a large scale. Once this is achieved, the challenge will be to create a vision for the organisation of the future, and to express this vision in terms of what would previously have been considered impossible improvement goals.

Skills and techniques for creating this vision and blueprint are not necessarily common business competencies for many South African companies considering the paradigm shift required of top management. The empirical data in this study suggest that South African companies are only beginning to apply these advanced techniques. Progress in this area will have to be made very quickly if many South African companies are to meet the challenges of intensive international competition.

The role of leadership and management (extended Factor 2): The need for visionary leadership in the Quadrant 4 scenario is significantly greater than in Quadrant 1. As opposed to continuous improvement, top management have to be the architects of change and have to remain intimately involved in guiding the process of change in this scenario. While the essence of continuous improvement is to empower employees to a significant degree, reengineering cannot be delegated. Companies in

some circumstances may even have to assess the capabilities of some of their top executives who may be exceptional managers during times of relative calm, but who may not have the leadership capabilities during a time of major change.

Because of the magnitude of change required and the skills required to redesign the core processes, a specialised team will need to be assembled reporting directly to the top executive. This team will design and manage the change. Line management's role in this scenario is to ensure that employees affected by the change become involved in supporting and contributing to the change through continuous improvement efforts, and receive ongoing communication on issues which will affect them.

Customer focus (Factor 3): Hammer (1993:49) comments that while reengineering and quality management are fundamentally different, they do share two basic similarities, namely that they both recognise the importance of business processes and they both start with the needs of the customer. There is evidence from the empirical data in this study that companies do not necessarily support their expressed beliefs about the importance of customer focus with action, particularly when it comes to dealing with difficult issues such as systems, structures and organisational culture. Herein lies a high risk for South African companies undertaking major change. This risk is to approach change with an internal perspective. For example, cost reduction initiatives often are conducted with little sense of purpose other than cost reduction itself. In many cases customer value can decline as a result with potentially devastating results.

Employee appraisal, remuneration and empowerment (extended Factor 4): Hammer and Champy (1993:72) note that in an environment of process innovation and reengineering, the nature of compensation should change substantially, particularly for top executives, from a focus on performing activities and duties to one of achieving results. This is similar to a Quadrant 1 scenario with the application of continuous improvement except that a far greater focus shifts to top management. As noted in section 7.3.1.4, the companies sampled in this study appear to have designed their compensation programmes around achieving results at top management level but rather less linked to performance improvement at worker level. Based on this result

companies in South Africa appear better placed for Quadrant 4 scenarios than Quadrant 1.

Companies will have to consider the remuneration implications of factors integral to both reengineering and major innovation as well as for continuous improvement. Remuneration based on results and value contribution suggests that the tradition of pay depending on seniority will decline. Remuneration based on the value of the work being performed implies a discrete ability to measure this value. The model of continuous improvement and reengineering is, in part, based on the principle of work processes which add value to the customer. Each activity step must be assessed in terms of its value contribution to ultimate benefit to the customer. Therefore it is primarily the customer or receiver who should determine the value of work done and value received. It is strongly recommended that companies investigate methods in which work done and value received, within a company-wide process system, is **paid for** by those requiring the work output whether they be internal or external customers.

For example, if a unit within the company performs a training function for the rest of the company then this training should be paid for by those who require the training. If the training is not seen as up to standard then those requiring training should be in a position to use outside services which are perceived to provide better value. The internal training unit then is forced to consider the needs of internal users in their delivery of value relative to what is available elsewhere in the marketplace. If they are not in a position to meet the needs of internal customers they "*go out of business*" in a sense. The manager of this unit should then be remunerated on the degree to which the training unit is "*profitable*", and to an equal or lesser degree, so should the employees in this training unit. Without this value orientation, the potential for internal structures and functional units to grow with no consideration to value to the company is fueled by traditional remuneration systems - the more employees a manager has, the bigger the budget, the larger the "*empire*", the more senior and the more money the person earns. Continuous improvement and reengineering systems will only work effectively if some form of value oriented remuneration based on the value added by work processes is in place.

Training, communication and coordination (Factor 5): The focus of training in the Quadrant 1 scenario is primarily on developing skills for continuous improvement for all employees. The focus for reengineering is somewhat different and places the focus of attention largely on management and specialised teams. Top management responsibility is heavily focused on developing a vision and blueprint for change, as noted previously, on true leadership during rapid and complex change, and on management of change. These are skills which are not necessarily gained during traditional development of executives to top management positions. These skills , in many cases, will have to be acquired by many top managers. Line management's need for training will be for skills relating to the management of change in terms of providing support to their employees, as well as skills related to their existing roles of supporting and facilitating the continuous improvement process discussed for Quadrant 1.

Companies preparing for major change will have to make a decision on whether they have the resources internally to create specialist reengineering teams, or whether they will have to commission external specialists. If internal resources are available then some degree of additional specialised training is strongly recommended. The reason for this extensive training, even of top managers is that the forces of the status quo are great, and their is a significant risk that a lack of understanding of the principles and expertise in major change projects will result in disruption to day to day work being caused but with limited results. If the decision is to bring in external specialists it is essential to ensure that these specialists be required to transfer knowledge on all reengineering skills to an internal team. This is more difficult than may be immediately apparent because many reengineering consultants are not equipped (or motivated) to transfer learning, with the result that large fees are paid with little expertise being gained by the company. The company is then continually dependent on external assistance to redesign its core business processes.

Communication and coordination of large scale change is a critical dimension of Quadrant 4, and the need and nature of communication is quite different from Quadrant 1. In continuous improvement, employees are intimately involved in a recognised system of change and innovation which is (or should become) the way

things are done in the normal course of daily work. Communication will focus on individual and team achievements, newly developed standards of performance, best practices, improvements to the continuous improvement system, and the strategic direction of the company. For reengineering efforts, employees are not themselves intimately involved, yet the "*grapevine*" will inevitably communicate that major change is being planned. A significant mistake which can be made in large organisations is for management to believe that the decision is one of to communicate or not to communicate (possibly for reasons of secrecy or for fear of creating concern amongst employees) sensitive and strategic issues. Inevitably this information gets out into the organisation, and if it moves through informal channels (the "*grapevine*") it is inevitably distorted and negative, with the result that fear and distrust can result. Internal employee communications in large organisations is seldom considered to be a core process in itself. The model for innovation and change proposed in this study holds that major change efforts are so dependent on effective communication with employees and other stakeholder groups that the communications processes in the organisation become one of the preparatory redesign efforts in order to more effectively gear the organisation for the change ahead.

The need for top management coordination of major change projects is based on the reality that, despite the role played the specialised reengineering team described above particularly if it includes external specialists, is that redesign, and even more importantly implementation, of the change strategy will be dependent on the commitment of functional managers across the organisation. To ensure that the original vision for change is not distorted over time and that each functional entity performs their task in coordination with other entities involved, Harrington (1991:27) calls for an EIT (Executive Improvement Team) or executive steering team to be set up for this task. Whether the coordinating forum is permanent or temporary, it is essential that effective coordination of strategic change take place. It is suggested that an area of significant concern emerging from the empirical data in this study is that quality improvement efforts appear to be poorly coordinated across organisations, with the result that overall negative impact on performance is significant. This could be a primary reason for the limited relationship between continuous improvement activities and profitability found in this study.

Process performance standards in key business processes (modified Factor 6): The basic principles here are essentially the same as in Quadrant 1 except that the processes being considered are company wide in scope and are of a strategic nature (in other words they are core processes). Performance standards in this paradigm of reengineering deal with the concept of international "*best of class*" benchmarking, or at least competitive benchmarking. The benchmarked performance scorecard (section 4.3.2) for core reengineered core processes should become a key focus for top management rather than the financial orientation of many of today's companies.

Performance monitoring and control (Factor 7): This subject is briefly considered in the last paragraph in terms of a central balanced scorecard of performance with a focus on key performance criteria related to core process performance against "*best of class*" international benchmarks. Davenport (1993:163) notes the importance of including process performance measurement as an integral component of the process redesign or reengineering model and includes benchmarking as a fundamental aspect of this. South African companies included in the sample for this study do not apply benchmarking techniques extensively, and there is clearly a need for significant development in this broad area of management.

The application of tools and techniques for process improvement (Factor 8): Davenport (1993:16) raises and important role for the "*tools for change*" which is based on an inductive philosophy of change and terms these tools "*enablers of change*". He believes that by providing the necessary tools for change, including financial, human and technological, and the specific vision within which to apply them, the pathway to that vision will become evident as opposed to applying abstract strategic planning methods of previous years, which have been more recently shown to be too rigid and theoretical. This inductive philosophy is strongly supported in this recommended model for innovation and change since it supports an action and results oriented change approach commented on throughout this study. Davenport (1993:141) labels a range of process improvement techniques "*traditional*" techniques. These are Activity Based Costing, Process Value Analysis, Business Process Improvement, Information Engineering and Business process Innovation.

While the label may be arguably appropriate or not, both this study and the IQS suggest that these techniques are not commonly used. Davenport's model of Process Innovation (1993:153) takes a step beyond certain "*traditional*" approaches and essentially adds the dimension that radical improvements cannot begin by accepting the existing process as the starting point. As noted already, the sample of South African companies in this study do not appear to be applying even the so-called traditional methods of process improvement extensively. It is therefore recommended within this proposed model for innovation and change that companies extensively review and enhance their improvement methodologies based on core process innovation related techniques.

The role of technology: The title of Davenport's text (1993) "*Process Innovation: Reengineering Work Through Information Technology*" makes the point about the role of technology in being central to process innovation and change. This subject is in itself vast and it is not the purpose or capacity of this paper to discuss it in detail. In summary, it is recommended in this model for innovation and change that the techniques and competencies required for innovation through technology be intensely reviewed by South African companies since the research results suggest that companies are not competitive in this area as they feel they need to be. Also sampled companies do not rank technology management as one of their most critical future success factors.

Organisational structure and core processes: Organisation performance improvement and innovation is significantly enhanced or inhibited by organisational structure as is continuous improvement. Davenport (1993:160) comments that the core process based organisational structure mooted throughout this study should be basis of a change enabling organisational structure. In essence a process-oriented structure recognises how work is actually done rather than focusing on skills and functions, for example accounting, marketing and sales. A process based structure also facilitates another important component of this model for innovation and change, namely a customer focus. It is far more difficult for a functionally oriented company to focus all work on customer value (Davenport 1993:161). It is recommended strongly in this proposed model for innovation and change that organisations

intensively investigate means of redesigning this organisational structure along a process-oriented structure.

8.3.6 Conclusions

The model presented in this chapter is based on the findings in this research study and information obtained from the secondary research sources. Each element of the model deals with issues which justify entire studies in themselves. Unfortunately, it is not possible to deal fully with any single aspect in detail. The primary purpose of this chapter is to propose a broad model which could form the basis of an organisational innovation and change initiative.

CHAPTER 9

SUMMARY AND CONCLUSIONS OF THE STUDY AS A WHOLE

CONTENTS

9.1 Introduction

This study attempted to identify the relationships between certain dimensions of quality management and organisational profitability in a sample of South African companies. The study also investigated similar possible relationships between what were labelled as the evolving dimensions of quality management, more recently called reengineering, process innovation, or business process improvement by various international specialists) and corporate profitability.

The scope of the study was described in a detailed review of the literature which was used as the framework of the questionnaire and of the study in general. The framework of the study throughout, with minor adjustments for clarity and simplicity is:

- **The comprehensiveness of the quality system**: This is the degree to which companies include a comprehensive number of key business management practices and improvement techniques within their definition of quality management. These are defined by the eight factors (F1 to F8) described in section 6.3.

AND

- **The scope of integration and implementation of the quality system**: This describes the degree to which this quality system is implemented in diverse business units or functional units throughout the company, and which demonstrate entrenched quality concepts, principles and goals. This category also includes the focus of this quality system on major improvements in core processes across the organisation.

9.2 Conclusions drawn from the literature

Chapter 3 finds that the primary elements of a traditional quality system, largely defined by the Malcolm Baldrige criteria, include the following dimensions:

- A customer focus
- Leadership for quality
- Continuous improvement
- Employee development, empowerment and participation. This also includes training, teamwork and employee communications.
- Strategic quality planning
- Quality information and analysis
- Public responsibility

This chapter of the analysis found that there is significant concern by various writers of the failure of TQM to "*deliver the goods*". In many cases their are criticisms of the Baldrige despite the fact that it is more extensive and customer focused than the ISO 9000, for example, a system which is extensively adhered to by companies in Europe and to a lesser degree in the United States of America.

Chapter 4 deals with what has been labelled as the evolving elements of quality management. This is a far less structured set of dimensions, and in a number of cases various experts have tried to separate quality and their particular brand of improvement. This chapter also challenges these attempts on certain bases. The dimensions reviewed are:

- **The impact of quality performance on corporate performance**: While this is not necessarily a new focus, it is receiving renewed attention because of the perceived "*failure*" of TQM to impact the bottom line.

- **Performance measurement and benchmarking**: The concept of the "*balanced corporate scorecard*".

- **Core process management and process reengineering**: This phenomenon focuses on critical business processes and creating significant performance improvements as opposed to incremental improvements associated with traditional TQM.

- **Organisational structure**: This deals with the effect on TQM of the traditional functional organisational structures and bureaucracy and vice versa.

- **Teamwork**: This area deals with teamwork not simply as a tool for performance improvement, but as a fundamental element of organisational structure.

- **Organisational flexibility**: This relates to an organisation's ability to rapidly respond to changing market and customer needs and external environmental pressures.

- **Management of change**: Many companies have developed so-called management of change processes. Some evidence suggests that there is an intimate link between quality management processes and change management.

- **Customer value**: This takes the concept of customer satisfaction, which is fundamental to TQM, a step further.

- **The use of technology in quality management**: While the use of technology has always been an important part of quality management, a number of writers claim

that it has been somewhat incidental. Clearly from the literature technology is now making a greater impact on TQM.

9.3 Conclusions drawn from the empirical research

The empirical data in this study suggest that, in broad terms, a more extensive or evolved scope of application and practice of quality management and related management practices is related to better organisational profitability. The IQS study supports this by finding that a "*broadening focus*" and more sophisticated application of quality management practice between samples of lower performers progressing to higher performers, exists.

The significant correlations which were demonstrated are:

- A quality results focus (F1) by companies is inversely correlated with Operating Profit Margin (OPM).

- Quality training, employee communications and internal coordination (F5) correlates positively with Net Profit Margin (NPM).

- The use of quality standards (F6) correlates positively with Net Profit Margin (NPM).

- Quality control and monitoring (F7) correlates positively with Return on Equity (ROE).

9.4 Recommendations for future research

By design, the scope of the study was broad in order to determine the evolving scope of the subject. This required a wide range of seemingly unrelated business practices (at least one executive from a sampled company questioned the logic of this) to be reviewed. All of these could not be analysed in great detail with the result that some

topics have been given a superficial overview. While this was done knowingly with certain of the more common factors, it does leave a sense of requiring more information in certain areas. The following are key areas requiring further detailed research:

- The tools and techniques for innovation change should be analysed in greater detail through a case study method including a small number of leading companies in South Africa and abroad, since it appears that there are few South African companies if any with a significant degree of success in this area. In their formalised form, these tools and methodologies are still in their infancy and need to be fully investigated and developed. It is unfortunate to some degree that the reported progress in this area is being made by consulting companies who appear to have some bias to placing "*flavour of the month*" type labels on these methods and separating them from TQM for reasons which may be related more to marketing rather than sound business logic. An objective study should be conducted to remove some of the literature "*hype*" around this subject.

- Corporate performance is an area in which substantial research is required. While it is only one dimension of this study used in order to determine relationships, it is clearly an area going through change. The ability to determine the impact of business strategies on corporate performance must take priority over many other less quantitative studies, since it is this dimension which ultimately determines stakeholder value. Without a sound determinant of business success this type of quantitative research is difficult.

- Studies attempting to duplicate the results of this study should be encouraged, but with attempts to achieve a larger sample size. It would also be valuable to concentrate efforts on a single industry in order to eliminate differing industry economic conditions. A number business practices identified too late in the research to be included, or items which because of the large size of the questionnaire were left out, or subjects which received limited analysis in this study, deserve further investigation. In many cases these are emerging dimensions as follows:

- Strategic alliances for specialisation
- Organisational restructuring, especially related to the virtual company concept.
- The processes of creating a dynamic business vision and blueprint versus traditional strategic planning.
- As organisations become less hierarchically structured, the effectiveness of organisational communications will increase in importance.

This study was, by definition, investigated a broad range of business practices to determine the emerging scope of quality management. The questionnaire, as has been noted and described, is extensive and not all aspects of these data could be reasonably analysed given time and resource limitations. It is recommended that these data be more thoroughly investigated in order to identify additional insights into quality management, reengineering, change management and a range of other improvement techniques and practices.

9.5 Overall conclusions

A new integrated model for innovation and change is required which is inclusive and holistic rather than segmented and fragmented, a situation which appears to exist both internationally and in South Africa. This integrated model as presented in Diagram 8.1 recognises two seemingly apposing trends yet attempts to reconcile these: On the one hand companies are generally becoming increasingly decentralised with greater empowerment for employees in general. This juxtaposed with the need for major organisational change to be driven from the top. This balance between decentralised empowerment and centralised process innovation is created through vision, a flexible blueprint of the future and effective coordination forums.

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APPENDIX 1

RESEARCH STUDY QUESTIONNAIRE

AND COVER LETTER

Suid-Afrikaanse Buro vir Standaarde
South African Bureau of Standards
Dr Lateganweg 1, Groenkloof/1 Dr Lategan Road, Groenkloof

Privaatsak X191/Private Bag X191
PRETORIA 0001

U verw/Your ref:

Ons verw/Our ref:

Navrae/Enquiries:

☎

Datum/Date:

Survey of Quality Management Practices in South African Companies

The South African Bureau of Standards' Mission is to, in part, promote quality and standardisation of products and services in the South African economy. To achieve this goal the SABS periodically monitors the quality management practices of leading South African companies in order to identify best practices and standards. I am requesting your participation in a major study on the subject of quality management and organisational performance in this country.

We are all aware of the profound changes occurring in the South African business environment. Changes which international economies have adapted to over decades, are now being compressed into a few years for many South African companies. The potential role that total quality management can play in competitively positioning South African organisations is significant, particularly given the importance of product and service quality in international markets. But international research shows clearly that total quality management incorrectly implemented and managed is not a panacea to competitiveness.

This comprehensive study will investigate how South African companies are managing product and service quality, as well as organisational change. Your organisation's input into this study is vital to gain insight into local "best practices" and how these compare to international trends.

We are aiming at a 100% response to this study, and your company's participation is absolutely vital.

Full results of ...

Full results of the study will be provided to you on completion. The questionnaire is entirely confidential and **your company's name should not appear anywhere on the questionnaire**. Detailed instructions are contained inside the questionnaire.

Thank you sincerely for your participation. I believe you will find the questionnaire thought provoking, and the results of the study extremely valuable.

Yours sincerely

Dr J P du Plessis
President

P.S. I enclose for your information an overview brochure of SABS and its role in the South African economy.

SABS UNISA

Questionnaire for quality mangement research investigation

To the Respondent

Thank you for agreeing to participate in this research investigation into the evolving boundaries and impact of quality management in leading South African organisations. This questionnaire will require substantial thought and time and will take approximately one hour to complete, but we believe that you will gain real value from your involvement in this study, while greatly contributing to the value of the research.

The success of this study is entirely based on the quality of your input. It is vital to the success of the study that a 100 percent response is obtained in order for us to make relevant interpretations. With this objective in mind, it would be sincerely appreciated if this questionnaire could be completed according to the instructions overleaf and returned via the Freepost envelope enclosed. Alternatively arrangements can be made to have the questionnaires personally collected by one of our research assistants. A phone call will be made to your office in due course - any questions about the questionnaire can be answered by the research assistant at that time if you feel it necessary. Alternatively, the research leaders can be contacted at the phone numbers shown below.

Please note that for purposes of confidentiality, your company's name should not appear anywhere on this questionnaire. The code number printed on the outside back page will be used for internal administrative purposes.

One questionnaire should be completed at top executive level, and one at middle management/supervisory level. It is obviously important that the individuals selected at each level have a good understanding of the subject matter. If there are any questions that you may have concerning any aspect of this study please call Mr Kevin Weitz on (011) 636-2451 or Mr Regard Steenkamp on (012) 429-4457.

Again, thank you for your contribution to this study; we believe that your time investment will be both thought provoking and valuable for those involved.

The Research Team

Example 1

Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
1	2	3	4	5

Example 2

Very positive	Positive	?	Negative	Very negative
1	2	3	4	5

6. If you require additional space for any of your answers please use the note pages at the back of this questionnaire.

General information

1. **Please indicate in which management category your position in your company can best be categorised:**

Place your answer in this box

executive/senior management:	
middle management:	

2. Does your organisation operate any form of formal quality management/ control process or function?

Yes	
No	

3. If your answer to question 2 is no, please still complete as many of those questions which apply to your company as possible since your company may have many components of a quality programme but not necessarily formalised into a synergistic quality system.

   If your answer to question 2 above is yes, please mark the answer box next to the quality system/approach that best describes your company's quality management system.

   ISO 9000 (SABS 0157)

Malcolm Baldrige based system	

   Crosby

Juran	

   Deming

   Quality Function Deployment (QFD)

"Homegrown" or a combination (please identify primary elements if possible):

_____

_____

4. How many months has your organisation been operating a quality management programme?

5. Please complete the following corporate profile:

The total number of employees in your organisation: ☐

Identify the type of industry in which your organisation operates primarily:

Agriculture, hunting, forestry, fishing

Mining, quarrying, minerals ☐

Electronics and telecommunications

Information technology ☐

Motor vehicles and earthmoving equipment

Electricity, gas and water ☐

Building materials, steel, paint etc

Construction ☐

Wholesale and retail trade

Catering and accommodation services ☐

Food

Textiles ☐

Pharmaceuticals

Transport, storage ☐

Finance, insurance, real estate and business services

Community, social and personal services ☐

Other; please specify:

_____

_____

6. Corporate performance: *(to be completed by top management only)* Please indicate the following size/performance indicators for your company or organisational unit under consideration and compare these where possible, against the performance of your major competitors:

Important Note:

This section of the research is particularly vital to the success of the study – your particular attention to this section would be greatly appreciated. Significant steps have been planned to ensure the confidentiality of this data.

Performance Indicator	Indicator value/measurement	Degree to which these performance indicators compare to your major competitors				
		Very positive	Positive	?	Negative	Very negative
Market share		1	2	3	4	5
Turnover		1	2	3	4	5
Sales per employee		1	2	3	4	5
Total assets		1	2	3	4	5
Profit before tax		1	2	3	4	5
Return on investment		1	2	3	4	5
Profit as percent of sales		1	2	3	4	5
Return on assets		1	2	3	4	5
Operating costs per employee		1	2	3	4	5
Percent stock price increase over past 5 year period		1	2	3	4	5

Identify any further performance measurements/ratios that you utilise (not necessarily financial) to assess the performance of your organisation:

		Very positive	Positive	?	Negative	Very negative
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5
		1	2	3	4	5

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
7. The financial performance of my company has recently been negatively affected by external economic circumstances.					
8. My company's products/services are value-added as apposed to commodity type products/services.	1	2	3	4	5

Leadership

9. **To what extent do you agree with the following statements concerning top management in your organisation?**

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
– Top management are the clear and visible driving force behind our quality initiative.					
– Top management have a high degree of expertise in quality management principles/concepts.	1	2	3	4	5
– Top management have produced a clear statement of quality values and a quality policy to guide employee behaviour and actions.	1	2	3	4	5
– Top management are personally involved in quality management activities (actively demonstrating, communicating and reinforcing the companies customer orientation and quality values).	1	2	3	4	5
– Social responsibility issues are included into quality policies and/or our corporate mission. (Social responsibility may relate to enhancing/protecting the environment, supporting various social programmes or societal quality of life issues.)	1	2	3	4	5

Quality information and analysis

10. In your judgement, to what degree does your organisation successfully perform the following quality related functions?:

My organisation...

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
– maintains a database on quality performance measurements which are used to improve our quality performance.					
– maintains information on quality performance benchmarks for specific business functions/processes to compare our company against top performing companies in South Africa or in other countries.	1	2	3	4	5
– utilises quality performance information to improve organisational profitability?	1	2	3	4	5
– utilises an "Activity Based Cost accounting" methodology to complement our quality initiative	1	2	3	4	5

Strategic Quality Planning

11. Please give your opinion on the extent to which you agree with the following statements about your organisation:

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
– My organisation's corporate goals include specific goals for quality performance?					
– Corporate goals for quality performance are effectively interpreted by individual divisions/subsidiaries and included as subsidiary level quality goals:	1	2	3	4	5
– Tactical action plans are developed and implemented at divisional/unit level in support of corporate quality goals/ objectives?:	1	2	3	4	5
– Corporate and divisional/unit goals for quality are understood and actioned by all of our employees;	1	2	3	4	5
– Our quality management system has enhanced our ability to adapt to a rapidly changing external environment.	1	2	3	4	5
– Our corporate objectives include the need for flexibility/responsiveness to rapidly changing market demands.	1	2	3	4	5

List continues on the next page

– Customer requirements and satisfaction measurements are a critical input into our company's strategic planning process.	1	2	3	4	5
– Competitor benchmark measurements for quality performance are a vital input into our company's strategic planning process.	1	2	3	4	5

Human Resource Development and Management

12. The following human resource related areas are fully developed to support our company's quality system and its objectives:

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
– Education and training:					
– Recruitment:	1	2	3	4	5
– Employee performance appraisals:	1	2	3	4	5
– Performance recognition programmes:	1	2	3	4	5
– Remuneration practices:	1	2	3	4	5

13. Indicate the extent to which the following statements describe your organisation:

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
– The management style in our organisation is characterised by a highly disciplined command and control style of management.					
– The formulation of quality related strategies is completed by top management, with little input from lower level employees.	1	2	3	4	5
– Employees in our organisation work primarily as members of flexible work teams rather than as individuals with clear and precise work descriptions.	1	2	3	4	5

14. My organisation operates with a high degree of inter divisional/departmental synergy and cooperation at:

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
top management level	1	2	3	4	5
middle management/supervisor level	1	2	3	4	5
worker level	1	2	3	4	5

15. My organisation is characterised by tight control and rigid policies and routines. 1 2 3 4 5

16. My organisation realises that to be innovative, mistakes and failure in pursuit of success must be accepted. 1 2 3 4 5

17. All employees in my company are involved in the achievement of specific quality goals and objectives. 1 2 3 4 5

18. The following employees in my company are appraised and remunerated, in part, on the basis of their performance towards clearly defined quality objectives: 1 2 3 4 5

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
top management level	1	2	3	4	5
middle management/supervisor level	1	2	3	4	5
worker level	1	2	3	4	5

19. Training available for the following levels of employees in my organisation is effective enough for them to perform their jobs well in terms of achieving quality performance standards:

top management level	1	2	3	4	5
middle management/supervisor level	1	2	3	4	5
worker level	1	2	3	4	5

20. My organisation conducts regular employee recognition award programmes to encourage employees to meet quality performance requirements.	1	2	3	4	5

21. Interpersonal communication in my organisation is effective in the following areas:

– horizontally between peers at all levels	1	2	3	4	5
– between divisions/departments	1	2	3	4	5
– vertically between superiors and subordinates	1	2	3	4	5

22. Employees are empowered to make decisions normally outside of their scope of authority, in order to satisfy customers needs "on the spot"	1	2	3	4	5
23. Most direct contact with our customers is conducted by our most senior and experienced employees.	1	2	3	4	5
24. Our organisation effectively utilises team-work or quality circles to identify and solve quality performance problems.	1	2	3	4	5

Management of the Quality Process

25. Please indicate the degree to which you agree to the following statements:

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
– Customer requirements are always effectively incorporated into the design of our companies products and services.	1	2	3	4	5
– Quality requirements/standards are incorporated early into the design process of products and services.	1	2	3	4	5
– Our quality management efforts are focused on cross functional processes, rather than improving performance within divisional/departmental functions (a process focus versus functional focus).	1	2	3	4	5
– Quality requirements/standards are carefully monitored during:					
– production	1	2	3	4	5
– delivery of the product/service to the customer	1	2	3	4	5
– ongoing maintenance and service	1	2	3	4	5

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
26. Our organisation effectively manages supplier relationships to ensure that the quality of incoming materials/services is continuously monitored and improved.					
27. Specialised techniques are used by our organisation to ensure rigorous, accurate and objective assessments of the quality performance of critical processes, systems and practices.	1	2	3	4	5
28. Our organisation has implemented flexible systems/processes to achieve rapid response to changing markets and customer needs.	1	2	3	4	5
29. The use of advanced technology is critical for competitive advantage in quality performance in our industry.	1	2	3	4	5
30. Our company's use of technology for competitive advantage in quality performance is effective.	1	2	3	4	5

31. My organisation utilises the following techniques to improve quality performance?:

– Process capability improvement and simplification analysis	1	2	3	4	5
– Process cycle time analysis	1	2	3	4	5
– Value engineering	1	2	3	4	5
– Process reengineering	1	2	3	4	5
– Process cost analysis	1	2	3	4	5
– Statistical process control	1	2	3	4	5
– Inspection techniques	1	2	3	4	5

Other techniques used:

_____

_____

32. Major performance improvements will be necessary for our organisation to be competitive in the future? (as apposed to continuous incremental improvements.)	1	2	3	4	5

Quality results

33. Please indicate the extent to which you agree with the following statements about your organisation:

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
– Quality performance for key products/ services has significantly improved since we instituted our quality management system.	1	2	3	4	5
– Quality performance of our product/services compares favourably against that of our major competitors.	1	2	3	4	5
– The quality performance of our major material/service suppliers meets the quality standards we set for them.	1	2	3	4	5

34. Our quality management system has significantly:

– reduced our companies operating costs	1	2	3	4	5
– increased productivity/efficiency	1	2	3	4	5
– improved customer satisfaction	1	2	3	4	5
– Improved cycle times of key processes	1	2	3	4	5
– increased company profitability	1	2	3	4	5
– improved competitiveness	1	2	3	4	5

– If there are other key performance factors in your organisation significantly affected by your quality system, please describe these below:

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

35. The following performance areas in our company are superior to those of the leading competitor in our industry (or your next closest competitor if your company is the industry leader).

– low operating costs	1	2	3	4	5
– employee productivity/efficiency	1	2	3	4	5
– customer satisfaction levels	1	2	3	4	5

– cycle times of key processes	1	2	3	4	5
– company profitability	1	2	3	4	5

36. The prices/fees of our products/services are generally higher than those of our major competitors?

1	2	3	4	5

Marketing and Customer Satisfaction

37. Please indicate the extent to which you agree with the following statements about your organisation:

	Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
	1	2	3	4	5
– The development of long term customer relationships is very important to competitive success in our industry (as compared to one-off sales).					
Our organisation:					
– has achieved a high level of success at developing long term customer relationships.	1	2	3	4	5
– effectively assesses our customers satisfaction levels.	1	2	3	4	5
– compares favourably in overall customer satisfaction against our competitors.	1	2	3	4	5
– formally pursues an "internal customer" philosophy and strategy, in which each employee considers other employees, with whom they interact, to be customers.	1	2	3	4	5
– Includes quality related themes in our advertising and promotional strategies.	1	2	3	4	5

General Business

38. In my company, the following functions have clear and concise quality principles, objectives and practices entrenched within their day to day operations. (or are planned to have in the near future):

	Currently					In the future				
	Strongly agree	Agree	?	Disagree	Strongly disagree	Strongly agree	Agree	?	Disagree	Strongly disagree
– Business strategic planning	1	2	3	4	5	1	2	3	4	5
– Marketing management	1	2	3	4	5	1	2	3	4	5
– Financial management	1	2	3	4	5	1	2	3	4	5
– Business accounting	1	2	3	4	5	1	2	3	4	5

List continues on next page

	Currently					In the future				
	Strongly agree	Agree	?	Disagree	Strongly disagree	Strongly agree	Agree	?	Disagree	Strongly disagree
– Internal employee communications	1	2	3	4	5	1	2	3	4	5
– Research and development	1	2	3	4	5	1	2	3	4	5
– Human resources management/ personnel	1	2	3	4	5	1	2	3	4	5
– Operations management	1	2	3	4	5	1	2	3	4	5
– Information system management	1	2	3	4	5	1	2	3	4	5
– Training and development	1	2	3	4	5	1	2	3	4	5
– Manufacturing	1	2	3	4	5	1	2	3	4	5
– Customer service/support	1	2	3	4	5	1	2	3	4	5
– Supplier management	1	2	3	4	5	1	2	3	4	5
– Legal department	1	2	3	4	5	1	2	3	4	5
– Public relations	1	2	3	4	5	1	2	3	4	5
– Social responsibility function	1	2	3	4	5	1	2	3	4	5
– Union relationships/negotiating	1	2	3	4	5	1	2	3	4	5

Please indicate other key functions that satisfy question 38.

	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5

39. Please indicate the extent to which you agree with the following statements about your company:

The following business functions are critical to my companies overall success/competitive advantage; (while recognising that most of these functions may be considered necessary for day to day business, but not key to achieving competitive advantage):

	Currently					In the future				
	Strongly agree	Agree	?	Disagree	Strongly disagree	Strongly agree	Agree	?	Disagree	Strongly disagree
– Business strategic planning	1	2	3	4	5	1	2	3	4	5
– Marketing management	1	2	3	4	5	1	2	3	4	5
– Financial management	1	2	3	4	5	1	2	3	4	5
– Business accounting	1	2	3	4	5	1	2	3	4	5
– Internal employee communications	1	2	3	4	5	1	2	3	4	5
– Research and development	1	2	3	4	5	1	2	3	4	5
– Administration	1	2	3	4	5	1	2	3	4	5
– Human resources management/ personnel	1	2	3	4	5	1	2	3	4	5
– Operations management	1	2	3	4	5	1	2	3	4	5
– Information systems management	1	2	3	4	5	1	2	3	4	5
– Training and development	1	2	3	4	5	1	2	3	4	5
– Manufacturing	1	2	3	4	5	1	2	3	4	5
– Customer service/ support	1	2	3	4	5	1	2	3	4	5
– Supplier management	1	2	3	4	5	1	2	3	4	5
– Legal department	1	2	3	4	5	1	2	3	4	5

List continues on next page

– Public relations	1	2	3	4	5	1	2	3	4	5
– Social responsibility	1	2	3	4	5	1	2	3	4	5
– Union relation-ships/negotiations	1	2	3	4	5	1	2	3	4	5

Please indicate other key functions that satisfy question 39.

	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5

40. All of the elements of my company's quality programme are effectively integrated and synergistic to form an effective total quality system?:

Strongly agree	Tend to agree	?	Tend to disagree	Strongly disagree
1	2	3	4	5

41. In terms of an organisation being structured around <u>core processes</u> rather than the traditional functional structure described in question 39 above; Our organisation:

– Is structured around core processes.	1	2	3	4	5
– will be restructuring around core processes in the future.	1	2	3	4	5
– is not structured around core processes	1	2	3	4	5
– has a combined functional/core process structure	1	2	3	4	5

42. Please read the following areas of organisational competence/success carefully and circle the numbers next to the **five** which you feel have in the past (5 to 10 years) been more critical to your organisation's success. Once you have done this, please list these five items, in order of importance, in the space provided at the end of the list of items.

	In the past	In the future (quest. 43)
Innovative product/service development	1	1
Sound management expertise	2	2
Long-term management stability	3	3
Stability of the workforce	4	4
High level of skill/expertise in the workforce	5	5
Use of technology as a competitive advantage	6	6
High levels of employee productivity	7	7
Superior customer service/satisfaction	8	8
Governmental protection in your industry	9	9
Being a low cost/cost efficient operator	10	10
Superior levels of quality in product/service	11	11
Being highly adaptive to environmental change	12	12
High market share	13	13
Very good image in the marketplace	14	14
Clear understanding of strategic initiatives and support of these initiatives by all employees	15	15
Synergy and co-ordination within the organisation	16	16
Highly effective strategic alliances	17	17
Effective strategic forecasting/development/implementation of strategies	18	18
Intimate understanding of customer needs	19	19

List continues on next page

Operational efficiency	20	20
Strong organisational culture	21	21
Effective financial management	22	22
Organisation flexibility/agility in responding to increasingly diverse market demands and customer needs.	23	23
Labour relations/affirmative action/employee diversity	24	24
Product/service quality	25	25
Efficient organisational structures (streamlined, flexible etc.)	26	26
Meeting schedules/budgets for major projects	27	27
Good supplier relationships	28	28
Global marketing competence	29	29
Rapid development and delivery of new/innovative products to market	30	30
Others: _____	31	31
_____	32	32
_____	33	33

In the past (5 to 10 years) Level of importance	Number of item (list, in order of importance, the numbers of the items you circled above)
Most important	
2nd most important	
3rd	
4th	
5th	

43. Considering again all the areas of competence listed in 41 above, identify those factors which you believe will be of greatest importance <u>in the future</u>. Please rank in order of importance. List these in the same way you did for the previous question.

In the future Level of importance	Number of item (list, in order of importance, the numbers of the items you circled above)
Most important	
2nd	
3rd	
4th	
5th	

44. Considering the areas of competence that you circled in 41 above (in the past and in the future), is there any particular sequence of which these areas of competence must be developed (for example, a high level of technology competence may be required before organisational flexibility can be achieved and so on.)?

Yes	
No	

If yes, please indicate this sequence in the block provided below in order of sequence (for example, the sequence of low cost, high quality and then operational efficiency would be listed as 10,11,20).

45. Please indicate the extent to which you agree with the following statements about your organisation:

	Strongly agree 1	Tend to agree 2	? 3	Tend to disagree 4	Strongly disagree 5
– Organisational structures in my company are rigid and difficult to change.					
– A high degree of centralisation in decision-making exists.	1	2	3	4	5

List continues on next page

– We tend to perform functions internally in order to maintain control on quality (as apposed to outsourcing functions)	1	2	3	4	5
– Major organisational structural changes are planned in the near future to place higher caliber employees closer to the customer interface?	1	2	3	4	5

46. Indicate the following structural relationships within your organisation:

– The average number of people reporting to each manager (average span of control):

Less than 1 manager to 5 employees (1:5 ratio):

Between 1:6 and 1:10 ratio:	
Between 1:10 and 1:15 ratio:	
Between 1:16 and 1:20 ratio:	
Greater than 1:20 ratio:	
We do not measure spans of control:	

– The average layers of management for reporting from the bottom level of the organisation to the most senior levels in your organisation is:

Less than	3:	
	4:	
	5:	
	6:	
	7:	
	8:	
	9:	
	10:	
Greater than	11:	

List continues on next page

Our organisation does not measure layers of management:

– The total number of employees located within your head-office or corporate headquarters:

– The percentage of employees located within your headoffice/headquarters relative to your total company's staff complement:

47. A number of international companies have reported using "business reengineering" techniques to "radically" improve (40% to 70% performance improvements reported) key business processes/functions in their companies. These are used in unison with the traditional "continuous/ incremental" improvements achieved through quality management methods. Is your company utilising "reengineering" techniques to achieve radical improvements to any degree?

Yes	
No	
No, but will be using in the future	

If yes, please describe briefly the business process/function on which it was, or will be, applied, and the estimated performance improvement achieved or anticipated:

Business function/process	Percentage performance improvement				
	<15%	16-25%	26-40%	41-60%	>60%
Example: Billing of customers			X		

If you have any further thoughts on this subject matter which you feel may be pertinent or valuable to this research study, please use the space provided below:

Notes

Notes

Notes

Thank you once again for your contribution to this research project.

APPENDIX 2

CODED QUESTIONNAIRE ITEMS

(Only variables utilised in the analysis are listed)

QUESTIONNAIRE ITEMS	CODE USED FOR VARIABLES IN COMPUTATION AND IN TABLES
2	V2
4	V4
5	V5
6.1	V8
6.2	V9
6.3	V10
6.4	V11
6.5	V12
6.6	V13
6.7	V14
6.8	V15
6.9	V16
6.10	V17
7	V18
8	V19
9.1	V20
9.2	V21
9.3	V22
9.4	V23
9.5	V24
10.1	V25
10.2	V26
10.3	V27
10.4	V28
11.1	V29
11.2	V30
11.3	V31
11.4	V32

11.5	V33
11.6	V34
11.7	V35
11.8	V36
12.1	V37
12.2	V38
12.3	V39
12.4	V40
12.5	V41
13.1	V42
13.2	V43
13.3	V44
14.1	V45
14.2	V46
14.3	V47
15	V48
16	V49
17	V50
18.1	V52
18.2	V53
18.3	V54
19.1	V55
19.2	V56
19.3	V57
20	V58
21.1	V59
21.2	V60
21.3	V61
22	V62
23	V63
24	V64
25.1	V65
25.2	V66
25.3	V67
25.4	V68
25.5	V69
25.6	V70
26	V71

27	V72
28	V73
29	V74
30	V75
31.1	V76
31.2	V77
31.3	V78
31.4	V79
31.5	V80
31.6	V81
31.7	V82
32	V83
33.1	V84
33.2	V85
33.3	V86
34.1	V87
34.2	V88
34.3	V89
34.4	V90
34.5	V91
34.6	V92
35.1	V93
35.2	V94
35.3	V95
35.4	V96
35.5	V97
37.1	V99
37.2	V100
37.3	V101
37.4	V102
37.5	V103
37.6	V104
38.1	V105
38.2	V106
38.3	V107
38.4	V108
38.5	V113
38.6	V114

38.7	V115
38.8	V116
38.9	V117
38.10	V118
38.11	V119
38.12	V120
38.13	V121
38.14	V122
38.15	V123
38.16	V124
38.17	V125
38.18	V126
40	V175
41.1	V126
41.2	V127
41.3	V178
41.4	V179
42.1	V180
42.2	V181
42.3	V182
42.4	V183
42.5	V184
43.1	V185
43.2	V186
43.3	V187
43.4	V188
43.5	V189
44	V190
45.1	V191
45.2	V192
45.3	V193
45.4	V194
46.1	V195
46.2	V196
46.3	V197
46.4	V198
47	V199

APPENDIX 3

FINANCIAL PERFORMANCE RATIOS

METHODS OF CALCULATION

(Financial Performance Ratios Taken From McGregor's OnLine DataBase January, 1994)

(Ratios as defined by McGregor's Who Owns Whom 12th Ed. 1992, rear cover)

Net Profit Margin % = $\frac{\text{Profit attributable to Ordinary Shareholders}}{\text{Turnover}}$

Operating Profit Margin % = $\frac{\text{Operating Profit before Tax and Interest}}{\text{Turnover}}$

Return on Equity % = $\frac{\text{Profit attributable to Ordinary Shares}}{\text{Directors Loans + Ordinary Shareholders Funds}} \times \frac{12}{\text{No. Mnths.}}$

Return on Assets (ROCE) = $\frac{\text{Operating Profit + Ass Co /2}}{\text{Total Assets}} \times \frac{12}{\text{No. Mnths}}$

APPENDIX 4

COMPANIES RESPONDING TO THE STUDY BY CUT-OFF DATE

Abacus Industrial Holdings Limited

Aberdare Cables Limited

Adcock Ingram Limited

African Cables Limited

Afrox Finance Limited

Amalgamated Construction (Pty) Limited

Anglo American Properties Limited

Associated Engineering (SA) Limited

Barlow Rand Properties Limited

Bid Corporation Limited

Bidvest Limited

Blue Circle Limited

Boland Bank Limited

Bracken Mines Limited

Cadbury Schweppes (SA) Limited

Carlton Paper (SA) (Pty) Limited

Cashbuild Limited

Coates Brothers (SA) Limited

Consol Limited

Consolidated Murchison

Crookes Brothers

Cullinan Holdings Limited

Darling & Hodgson Limited

Delta Electrical Industries Limited

Edgars Stores Limited

Engineering Management Services Limited

Everite Group Limited

Firestone SA (Pty) Limited

First National Batteries (Pty) Limited

FoodCorp

Genrec Holdings Limited

Group Five Limited

Gypsum Industries Limited

Hudaco Industrial Limited

Investec Investment Trust Limited

Irvin & Johnson Limited

Johannesburg Consolidated Investment

Liberty Holdings Limited

Liberty Life Association of Africa Limited

Massonite Africa Limited

Mathieson & Ashley Holdings Limited

Medi - Clinic Corporation

Metalplus (Pty) Limited

Murray & Roberts Investments Limited

Mutual & Federal Insurance Co Limited

Nampak Limited

Oceana Fishing Group Limited

Otis Elevator Co Limited

Palabora Mining Co Limited

Placor Holdings Limited

Plate Glass & Shatterprufe Industries

Power Technologies Limited

President Medical Investments Limited

Pretoria Portland Cement Co Limited

Protea Ass Co ltd

Protea Furnishers Limited

Putco Limited

Rand Mines Limited

Randex Limited

Reinforcing Steel Contractors (Pty) Limited

Rely Precision Castings

Ribco (Pty) Limited

Romatex Limited

Rustenburg Platinum Holdings Limited

SA Breweries

Saficon Investments Limited

Sakers Finance and Investment Corporation

Santam Limited

Sappi Limited

Sasol Limited

Score Supermarket

Sentrachem Limited

Silveroak Industries Limited

Smiths Manufacturing (Pty) Limited

SPL Limited

Standard Bank Investment Corporation Limited

Standard Engineering Limited

Stellenbosch Farmer's Winery Group Limited

Storeco Limited

Suncrush Limited

Supreme Springs (Pty) Limited

Tedelex Limited

The Lion Match Group Limited

Tomkor Limited

Tongaat- Hulett Group Limited

Toyota SA Limited

Trans Hex Group Limited

Tweefontein United Colleries Limited

Unitrans Limited

Vektra Corporation PLC

Xeratech

APPENDIX 5

LOADING FACTOR TABLES FOR FACTORS 1 - 8

TABLE 1 SOLUTION MATRIX FOR FACTOR 1

VARIABLE	FACTOR LOADING
V92	0.81
V89	0.73
V91	0.72
V87	0.72
V96	0.70
V90	0.67
V88	0.61
V84	0.60
V85	0.45
V94	0.40
V36	0.36
V93	0.35

TABLE 2 SOLUTION MATRIX FOR FACTOR 2

VARIABLE	FACTOR LOADING
V21	0.78
V20	0.77
V22	0.75
V29	0.67
V23	0.55
V30	0.50
V32	0.47
V31	0.45

TABLE 3 SOLUTION MATRIX FOR FACTOR 3

VARIABLE	FACTOR LOADING
V100	0.84
V61	0.67
V95	0.55
V102	0.50
V35	0.43
V73	0.42
V101	0.38
V62	0.35

TABLE 4 SOLUTION MATRIX FOR FACTOR 4

VARIABLE	FACTOR LOADING
V53	0.79
V52	0.76
V50	0.67
V41	0.61
V54	0.61
V40	0.38
V39	0.36
V58	0.35

TABLE 5 SOLUTION MATRIX FOR FACTOR 5

VARIABLE	FACTOR LOADING
V56	0.85
V46	0.84
V45	0.83
V55	0.82
V60	0.71
V61	0.70
V57	0.61
V37	0.60
V47	0.58
V49	0.54
V59	0.44

TABLE 6 SOLUTION MATRIX FOR FACTOR 6

VARIABLE	FACTOR LOADING
V69	0.68
V65	0.65
V67	0.56
V70	0.51
V66	0.50
V68	0.49

TABLE 7 SOLUTION MATRIX FOR FACTOR 7

VARIABLE	FACTOR LOADING
V72	0.75
V82	0.53
V81	0.51
V71	0.50
V80	0.45

TABLE 8 SOLUTION MATRIX FOR FACTOR 8

VARIABLE	FACTOR LOADING
V77	0.81
V79	0.50
V78	0.47
V76	0.46

APPENDIX 6

PROFILE OF THE STUDENT

Kevin Walton Weitz was born 20 January 1952 in Cape Town South Africa. He Matriculated from Parktown Boy's High School in 1969. He accepted a scholarship to Ohio University in the United States Of America in 1973 and completed a Bachelor of Arts, Business Administration from U.S. International University in San Diego, California in 1976. Mr. Weitz continued to work and study in the USA for 13 years in the management of health and wellness institutions. Mr. Weitz also completed a Master of Arts degree from San Diego State University in biomechanics and human physiology in 1983. After returning to South Africa in 1986, he joined a leading financial institution where he is currently employed as Manager Quality Systems. Mr. Weitz completed an Honours B.Comm from UNISA in 1991 with a specialisation in quality management.